The RUBBER AGE

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Rubber Reaches Lowest Price Since 1922; Rubber Pool Legality Challenged

Combination of Factors Forces Rubber Prices Steadily Downward Following Announcement That Restriction Would Expire November 1—British and Dutch Continue Efforts for Cooperation—Newton Bill Defeat is Unexpected—Investigation of Rubber Pool Legality Sought

THE aftermath of the British Government's announcement on April 4 that rubber restriction would be abolished on November 1 has brought about several developments within the last fortnight. The new outstanding features in the situation can be enumerated as follows:

Crude rubber prices for spot deliveries have further declined from 21 cents, the price quoted on the New York Rubber Exchange on April 4, to 17 cents, the closing price on April 18, and the trend of the market is still downward.

The British press and trade papers have been practically unanimous in criticising the blunt manner in which the abolition of restriction was announced by the Government. The losses in the rubber share market in London have been particularly severe.

The decline of the crude rubber market has led to considerable speculation as to the effect on tire prices and inventory values.

From the reports of various conferences held during the fortnight between groups of British and Dutch plantation interests it would appear that efforts are still being made to seek some ground for a cooperative plan for relieving the present situation.

Opposition against the Newton Bill seemed to crystallize over night in the House of Representatives on April 6 and the Bill was defeated by a vote of 181 to 120.

Immediately following the adverse action on the Newton Bill, the question was raised as to the legality of the Rubber Pool and Representative Jacobstein, of New York, addressed a letter to the Federal Trade Commission asking that body to make an investigation into the matter.

The entire crude rubber situation, since Premier Baldwin's announcement, has been cloaked with such uncertainty that the markets in both New York and London have shown extreme weakness and in spite of sporadic efforts to stabilize prices withou' further losses, the trend has been steadily downward. On April 17, the closing price for spot smoked sheets on the New York Exchange had reached 16½ cents, the lowest figure quoted since October, 1922.

At the same time the statistical position of crude rubber is showing no improvement. Stocks in London still remain around 59,000 tons and stocks on hand and afloat to the United States have reached the record peak of 153,385 tons. There would seem to be no single factor in the entire situation which would indicate any substantial improvement in price levels for some time to come.

The reaction of the British press and rubber trade journals to the Premier's announcement has been an almost unanimous denunciation of the Government's manner in handling the situation. The criticism chiefly centers around the fact that the present declaration is apparently a complete *volte-face* from the attitude of the Government at the beginning of the present restriction year, November 1, 1927, and from the Premier's assurances in Parliament on several occasions that the interests of the industry would be carefully regarded so as to disrupt the market as little as possible. The criticism has been directed in anything but honeyed words and the Government's action has been characterized in such terms as "blundering," "a betrayal of the rubber industry," "inexplicable damage," "Ministerial madness," and the like.

Following the Baldwin statement the rubber share market which had been showing a satisfactory firmness, fell off sharply. Rubber Trust shares suffered a precipitous break with other leading issues such as Anglo-Dutch, Allieds, Grand Centrals and Malayalans also showing sharp declines. The *Rubber Age* of London estimates the loss to shareholders in share values and earnings at £50,000,000. London claimed that many thousand rubber shares were passing into American hands at the new low price.

While there has been a general rejoicing in the United States at the repeal of the restriction scheme, in the reaction that has followed and as a direct result of the decline in crude rubber prices, considerable

TIRE DEALERS' STOCKS HIGH, SURVEY SHOWS

The average number of tires held by tire dealers in the United States on April 1 was 78.9, according to the preliminary report on the semi-annual tire dealer stock survey made by the Rubber Division of the U. S. Department of Commerce. This average is 8.3 tires per dealer greater than on April 1, 1927; 15.0 tires greater than on April 1, 1926; and 16.7 tires greater than on April 1, 1925. In past surveys the final report, which contains returns not received when the preliminary report was made, has shown a slight increase in the average. The average number of tubes held on April 1 was 121.2, which is almost exactly the same as a year ago. The average for solid and cushion tires was 33.2.

speculation has sprung up as to the effect of the lower crude rubber prices on future tire prices and as to what the losses in crude rubber inventory values will mean on the financial balance sheets of the manufacturing companies. The United States Rubber Company is already attributing the suspension of its preferred dividend to the sharp drop in rubber and undoubtedly many of the leading manufacturers, and particularly those who have been members of the rubber pool, will sustain heavy inventory losses, but it is too early to ascertain whether these will actually have to be written off or can be absorbed by maintaining present selling prices on finished goods.

This is especially true in the sale of tires, a huge number of which will have to go on the market containing rubber purchased around the 40 and 35 cent levels of three months ago. Many of the tire manufacturers have already declared themselves as opposed to a reduction in tire prices at this time, including Harvey S. Firestone, who has frequently been the prime mover in tire price changes.

From the reports of continued conferences between British and Dutch rubber growing interests in London, it would seem that hope has not completely disappeared from British minds that some plan for cooperative effort cannot be worked out. Discussions have been held between delegates appointed at the recent meeting of the Dutch rubber producers and the delegates of the British Rubber Growers' Association and in a general way all the grounds for acceptable opportunities of cooperation are being considered, but it is thought by a great part of the industry and trading fraternity that the time is past when any material good can be gained by an attempt at voluntary cooperation between the two interests, now that Government support has been withdrawn.

Newton Bill Defeated

Coincident with the abolition of restriction, though not directly a result of the Baldwin announcement, the Newton bill, which had for its purpose the amendment of the Webb-Pomerene bill to permit combinations for buying certain raw materials, including crude rubber, was defeated in the House of Representatives on April 6 through a coalition of farm bloc Republicans and the Democratic minority. The vote was 181 against 120. The debate on the bill was enlivened by a severe denunciation of the American rubber pool, which the bill sought to legalize.

As a corollary to the defeat of the Newton bill the question has now been raised as to the present legality of the American rubber pool and Representative Jacobstein, Democratic member from New York, has gone so far as to call upon the Federal Trade Commission to make inquiry into the alleged operations of the pool and determine the legality of its existence.

Weiss Patent on DPG Held Invalid by Supreme Court

Diphenylguanidine Accelerator Litigation Ends When Highest Court Invalidates Patent in Dovan-Corona Cord Tire Suit; Price Drops at Once; Manufacture of DPG Now Open to All.

MORE than five years of litigation on the validity of U. S. Patent No. 1,411,231 on the use of di-substituted guanidines as accelerators of vulcanization came to an end on April 9 when Chief Justice Taft read a decision of the United States Supreme Court holding the patent invalid. The plaintiff in the litigation was the Dovan Chemical Corporation of New York to whom Morris L. Weiss had assigned the patent granted him in 1922. The defendants in the district court suits from which the case was carried to the Supreme Court were the National Aniline & Chemical Company, also of New York, and the Corona Cord Tire Company of Butler, Penna. The Supreme Court decision means that diphenylguanidine, commonly referred to as DPG, can now be manufactured and sold without any license being required.

The immediate effect of the decision was to bring the price of DPG down from 64 cents to 40 cents per pound on contracts, the 40-cent price now being quoted by leading manufacturers of the material. The opinion is generally held that the price will remain at this level for the balance of the current year but should lower quotations be made by any new factors entering the field, the price will in all probability be lowered to meet the increasing competition, even if the selling price is below cost.

It is said, however, that the new 40-cent price can be justified to a considerable extent by improved methods of manufacturing DPG which leading producers have been able to work out in recent months. Several concerns which have never sold DPG are reported to be ready to enter the field but at the new low price there is little incentive for them to do so.

It is not thought that the price of other accelerators will be affected by the reduction in the price of DPG although the latter holds an important place in the line and will probably find its position strengthened by its lowered price.

On account of the wide interest in DPG and the litigation which has surrounded its manufacture and use, a comprehensive article on the history of the accelerator has been prepared by THE RUBBER AGE and is published on page 79 of this issue.

TOTG AND DOTG PATENT INTERFERENCE SETTLED

Interference in patent claims covering the rubber accelerators triorthotolylguanidine (TOTG) and diorthotolylguanidine (DOTG) was settled on April 2 when the Court of Appeals of the District of Columbia, through Judge Smith, handed down a decision awarding the patent right in the case of TOTG to Ralph V. Heuser and in the case of DOTG to Winfield Scott. The Heuser application is now held by A. G. Burrage, Sr., who is understood to be affiliated with the Portsmouth Dye & Chemical Co., Portsmouth, N. H. The Scott application is held by E. I. duPont de Nemours & Co., Wilmington, Del. The third party in the interference was Morris L. Weiss, whose application was to be assigned to the Dovan Chemical Corporation of New York.

The patent claims which were found in interference in the Patent Office were filed in 1921 and 1922. The Commissioner of Patents had awarded priority of invention to Mr. Heuser in both cases but the other applicants appealed with the result that, as set forth above, Mr. Heuser was sustained in the case of TOTG but in the case of DOTG Mr. Scott established his claim.

Mr. Heuser was able to establish his claim with reference to TOTG through the introduction of evidence concerning his work with the Atlantic Dyestuffs Company. This evidence, the court held, clearly proved that Mr. Heuser had reduced his invention of TOTG to practice and promptly filed an application for a patent therefor prior to Messrs. Weiss and Scott.

The contentions of Messrs. Heuser and Weiss that they had invented DOTG and reduced it to use before Mr. Scott had done so were rejected by the court. The evidence on behalf of Scott satisfied the court that he had conceived the use of DOTG as a rubber accelerator on Sept. 20, 1920; that he actually reduced his conception to practice by using DOTG as an accelerator on March 15, 1921, and by testing the vulcanized product on March 16, 1921. An appeal from the decision is possible but whether one will be taken is not yet known.

APPEAL BRIEFS ARGUED IN GRASSELLI DPG SUIT

Arguments on the briefs filed last month in the Grasselli-National Aniline suit over the Hoffmann and Gottlob patent No. 1,149,580 were heard on April 17 and 18 before the U. S. Circuit Court of Appeals in the Post Office Building in New York City. The Grasselli Chemical Company as assignees of the above patent, are appealing the decision of the U. S. District Court for the Southern District of New York which found in favor of the National Aniline & Chemical Company, who claimed that the manufacture of DPG did not infringe the patent in suit. This decision was handed down in January, 1927.

The present step consisted of arguments on both sides on the Grasselli brief on appeal. Attorneys for National Aniline filed an answering brief with the court and it is understood that a reply to this brief may still be filed by Grasselli. A decision in the appeal is expected in several months.

The Testing of Rubber Goods for Sunlight Effect

The Need for Increasing the Resistance of Rubber Goods to Sunlight Has Caused the Development of Equipment to Simulate the Sun's Rays During Tests—Use of Sun Itself Found to be Impractical

By HUGH E. WEIGHTMAN

OF the annual production of rubber and rubber goods in the United States it is said that eighty per cent is used in the automotive industry. Most of this rubber is exposed to sunlight. The deleterious effect of sunlight on rubber is well known but not as well understood. Attempts at simulating the effect of sunlight in the laboratory have in many instances been futile on account of the failure to understand the working of sunlight in its action on rubber. It is the purpose of this paper to give as clear a conception of the action as possible without going into intricate physical and chemical relations. Once the underlying principles are understood much progress will be made in the field of better rubber goods production.

Among the early attempts to determine the effect of light on rubber were the tests of Heilbronner and Bernstein.* These tests were made with a source of selective radiation in the extreme ultra-violet region and show that ultra-violet radiation causes free sulphur to be combined to vulcanize the rubber. In these tests thin sheets were used that were not vulcanized to start with. In 1913 Bernstein obtained a patent on this process (English Pat. No. 17,195). The process was only applicable to thin sheets and not of much consequence as an industrial proposition. It did, however, point out the reason for the action of light on rubber.

In the experiments leading up to the testing method to be described later it was found that tests made with sources of selective radiation having a maximum radiation in the extreme ultra-violet region did not duplicate practical exposures to sunlight. It was evident that there was more than just the ultra-violet radiation involved in the deterioration of rubber goods. The most noticeable action was on the tests of samples containing reclaimed rubber. Here materials that failed in use stood up well under the test and some excellent materials for practical use failed under the tests. From the experience with the use of radiation in testing textiles for fading and loss of tensile strength with light the use of the carbon arc was tried. With a violet carbon arc results were more in line with the tests of practical use of the rubber goods.

The equipment of the apparatus with holders so that the rubber sample might be exposed to the light with the rubber in tension brought the results to an agreement with practice as regards rubber tires. By the addition of a fan for air circulation and temperature control and adding a water supply for humidity control even the most delicate rubber fabrics could be tested with comparable results.

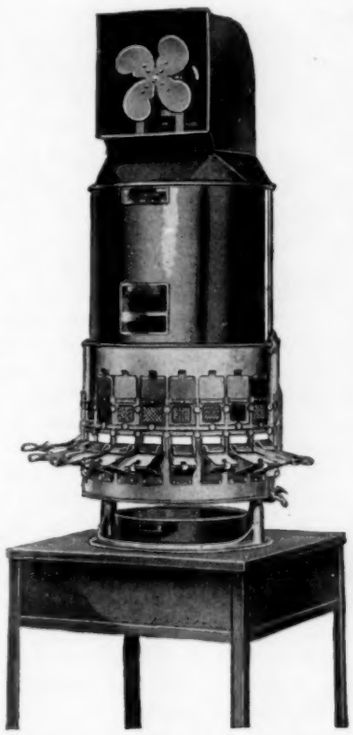


Figure 1—This View of the Age-Ometer Shows the Apparatus as Finally Developed

Figure 1 shows the view of the apparatus as finally developed, while Figure 2 is a close-up showing the holders for putting the rubber samples under tension on the face exposed to the electric sunlight. Above the tension holders is a series of openings by means of which holders may expose flat samples of fabrics for testing for fastness to sunlight.

Panels used for radio and electric laboratory instruments must have a constant resistance. Rubber has been used principally for these panels since it is non-hygroscopic. Rubber does, however, show marked changes in resistivity with exposure to light. By the use of supplementary electrical testing apparatus with the Age-Ometer it is possible to follow the samples hour by hour and day by day and know what the effect of light is on various compositions of panels. It is a curious fact that some panel materials will decrease rapidly in resistivity under prolonged exposure but if the exposure is interrupted by placing the sample in a dark room for a period the rubber recovers its initial resistivity.

This is not true of all panel materials. Some recover only slightly. A great deal depends on the length of exposure and the time allowed for recovery. Those panels

* See J. Torrey and A. S. Manders, "The India Rubber Industry," 1914, page 156.

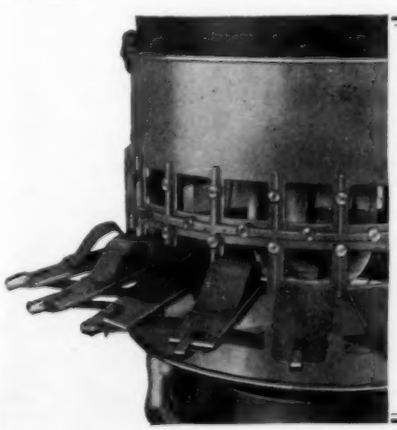


Figure 2—This Close-up View Shows the Holders for Putting Rubber Samples Under Tension on the Face Exposed to the Electric Sunlight

which were improperly handled mechanically when manufactured are the worst offenders. Neither chemical analysis nor microscopic examination discloses the poor panels, the exposure test being the only solution. It is necessary to test each shipment in order to be certain that the apparatus will remain in calibration in service.

It is not the ultraviolet radiation alone that is responsible for this effect as panels used in radio sets installed in dim corners of homes show a gradual decrease in efficiency after a year's operation. The writer has two panels that in a period of two years have suffered a decrease of surface resistivity and an increase in phase angle.

It is a well known fact that rubber erasers used by draftsmen are thrown away long before they are used up simply because the eraser hardens when left exposed to the light as it must be if used on a board. Shortly a better wearing eraser will be on the market that will not increase in hardness with exposure. This progress is due to finding a compound that will not harden when exposed to excessive light. Finding that will also mean a cheaper product since it permits the use of rubber waste from which it has been impossible to produce durable erasers in the past.

The use of reclaimed rubber in the manufacture of lineman's gloves and rubber sleeves for high tension line work has never progressed far simply because such samples fail rapidly on the shelf. A thorough research into the problem will no doubt disclose the possibility of so correcting production methods and compounding that rubber goods with a high proportion of reclaimed rubber will stand up better under exposure.

It is evident that the field for the use of a standardized source of sunlight is wide. It would seem that the most logical thing would be to use the sun for the source since the sun is the cause of the trouble. This was tried in the textile industry, but the sun was so variable, especially in crowded industrial districts with smoke and fog, that the impracticability of using the sun was proven. Obviously, some source of energy as near sunlight as possible was needed for the tests. This source must be dependable at all times of day or night.

Figure 3 shows by a graph the comparison of sunlight intensity in foot-candles during different hours of the day and various periods of the year. These curves represent typical days; during periods of fog, in smoky industrial regions and in cities the intensity will be much lower. Often the intensity is nil. It is evident that under these conditions, unless we have some means for integrating the actual sunlight intensity over the period of exposure, we may not hope to produce comparable results in our tests. The top

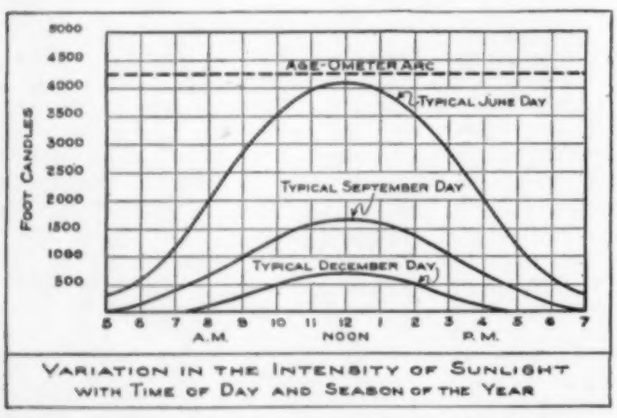


Figure 3—Comparison of Sunlight Intensity in Foot-Candles During Different Hours of the Day and Various Periods of the Year

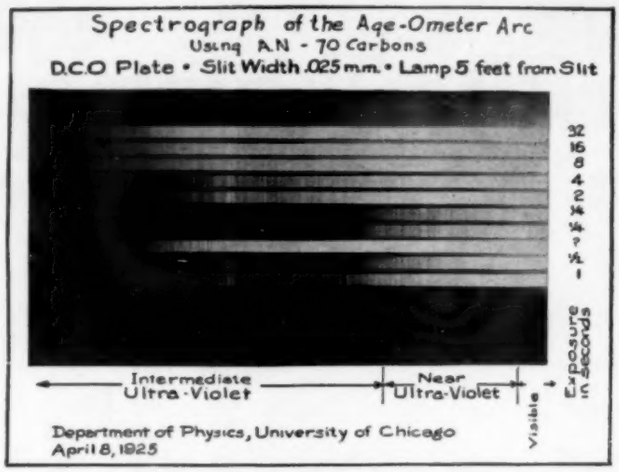


Figure 4—Spectrograph Analysis of the Arc of the Age-Ometer as Compared to Sunlight

curve in Figure 3 shows the constant intensity of light from the Age-Ometer.

The usefulness of any source of radiation for testing rubber and rubber fabrics depends primarily on how close it matches the solar radiation. The sun is what is known as a temperature radiator. That is, the radiation consists of an equal intensity of all frequencies, from the highest to the lowest. Our atmosphere acts as a screen so that we receive at sea level only frequencies long enough not to be absorbed by the atmosphere. Further, the atmosphere exerts an effect of selective absorption on the radiation, greatly decreasing the intensity of those of the higher frequencies. Figure 4 shows a spectroscopic analysis of the arc of the Age-Ometer as compared to sunlight. This shows that the arc closely matches the sunlight. It is rather difficult to print the spectrum and many details are lost. The examination of the spectrum as taken shows a much closer approximation.*

The nature of the changes, colloidal and chemical, which take place in vulcanized rubber during aging, and which are of great importance from a technical viewpoint, are not yet completely understood. Elucidation will probably have to wait upon some measure of understanding of the real nature of vulcanization.

There is no doubt that wherever the rubber comes in contact with surfaces during molding or forming, the dispersion of the colloidal particles fails to maintain a uniform special distribution. At the surfaces of contact the concentration becomes greater than at the interior. No doubt, in the light of recent experiments, the action of radiation is to further increase this concentration. Under tension of the system this action appears to be assisted, or to occur with radiation of lower frequency. It appears that the higher the frequency of the radiation the greater the action for unit exposure. The action is evidently not directly proportional to the frequency for otherwise a source of selected radiation would produce effects comparable to that of sunlight and the Age-Ometer. There remains a great deal of work to be done on the relation of light to behavior of rubber compositions just as there is considerable work still to be done to uncover the exact nature of vulcanization.

A freer attitude regarding data and the increasing tendency of the manufacturer to discuss his product with the physicist is rapidly bridging the gap between the unknowns.

* For the benefit of those desiring literature on the subject of radiation "Ultraviolet Radiation," by M. Luckiesh (D. Van Nostrand Company, 1922) will give some interesting light on the subject as will "Radiation, Light and Illumination," by C. P. Steinmetz (McGraw-Hill Company). However, neither of these books gives data regarding the application of radiation to rubber.

Dispersed Rubber Outlook Good Under New Company

Oaks Plant Operating Since April 1, Principally on Reclaimed Rubber—Licensee Also Producing for Shoe Findings—Other Principal Uses in Rugs, Auto Topping and Paper—General Review of Water Dispersions of Rubber

THE Pratt process of dispersing rubber, long talked about in rubber manufacturing circles, has at last found itself fully in the field of practical application with prospects of considerable expansion within the next few months or years. A new company known as Dispersions Process, Inc., mentioned in a previous issue of THE RUBBER AGE, has been operating its dispersion plant at Oaks, Penna., since the first of April and is making regular shipments of dispersions to customers. At the same time, the Beckwith Manufacturing Company of Boston, has, under license from Dispersions Process, Inc., begun the manufacture of dispersed rubber in the New England plant where dispersed rubber had its first commercial trial at the hands of the Aqua Rubber Company.

The Aqua Rubber Company, whose address was 31 Old Heath street, Boston, was a subsidiary manufacturing unit of a company known as Research, Inc., also of Boston. From the latter the new company, Dispersions Process, Inc., only recently incorporated in Delaware, has obtained all assets, including full rights to the Pratt process for water dispersions of rubber. Manufacturing is being done in a new plant specially erected for the company at Oaks, Penna., adjacent to the rubber reclaiming plant which the Philadelphia Rubber Works Company has at that place. The logic of such a location lies in the fact that the majority of the company's activities will be in the field of dispersing reclaimed rubber instead of crude rubber, although the latter will not be neglected. In addition to its own manufacturing, Dispersions Process, Inc., will license selected companies to use its processes.

Reclaimed Rubber Now Dispersed

When the Pratt process of dispersions was first talked of it was generally in connection with crude rubber, but on account of the satisfaction of the product and the difference in cost, reclaimed rubber has come to be more widely used and will probably hold its place of supremacy. The color factor forces the use of crude rubber in dispersions for certain uses since dispersions of reclaimed are satisfactory for dark colors such as browns, dark reds, etc., whereas crude rubber is needed for dispersions having lighter colors. The advantages of reclaimed rubber from a cost standpoint, of course, need no elaboration.

The chief uses to which dispersed rubber is being put at the present moment are in connection with shoe findings, double texture auto topping, long fibre rugs and rubberized paper. Many other applications have been and are being developed, concerning which detailed information will be published later.

In the shoe findings field, for instance, the Beckwith Mfg. Company is using dispersed rubber in the manufacture of box toes and counters which are sold to many shoe manufacturers. Box toes made with dispersed rubber have the advantage of being waterproof and flexible; hence, they will not soften or become shapeless and accordingly they enable a shoe to retain its shape and style for a longer period under difficult wearing conditions.

In the rug field, dispersed rubber is used as a binder in the manufacture of long fibre rugs. In the auto topping field, it is used as an adhesive between the plies. In the paper field, the material is used to bind the fibres, giving greater strength, flexibility, and water repellant properties.

With regard to other possible applications, officers of Dispersions Process, Inc., are not yet ready to talk, although they admit that they are numerous and that some of them are already under serious consideration.

Technical Side of Rubber Dispersions

The technical side of water dispersions of rubber and of the equipment used in the process has been discussed in three articles in THE RUBBER AGE to which readers are referred.[1] In general it may be said that the process rests on the theory that the rubber hydrocarbon particles in crude rubber are surrounded by a film of non-rubber substances. In rubber latex each particle of rubber hydrocarbon with its protective coating or film of non-rubber substances remains separate and free. In coagulated rubber the protective coatings become mechanically adherent. Thus, in coagulated rubber there would be a disperse phase of rubber hydrocarbons and a continuous phase of non-rubber substances. In the dispersion process the original function of the protective coatings is restored and their adhesion with each other is broken up in an emulsion with water. In other words, water dispersion of rubber may be compared for the layman to a reversal of the coagulation process, returning the rubber into liquid form in water.

The patents originally taken out by William Beach Pratt, the inventor, gave two distinct classes for the production of rubber dispersions. One embraced the use of a solvent and the other did not. As the process is practised today, the solvent is not used. Instead, water is introduced into the rubber and when the protective coatings of the rubber globules are rehydrated, a lubricating substance is introduced which enables the globules to slip over one another and be definitely and permanently separated. Close observation over extended periods has shown that there is no reverting of the dispersed rubber to its coagulated form and but little settling in the containers. Whatever little settling does take place when dispersions are allowed to stand for some time may be returned to the original consistency of the dispersions by stirring, much as paint is stirred before use. Dispersions are not produced according to one formula, but differ slightly according to the uses to which they are to be put.

The principal equipment used in producing dispersed rubber consists of two-roll rubber mixing mills and any internal mixer which gives suitable mixing action. The

[1] THE RUBBER AGE, Vol. 15, pp. 15 and 16 (April 10, 1924); same volume, pp. 299 and 300 (July 25, 1924).

process is started on the mill and after warming-up, the rubber is transferred to the mixer. As the rubber is pulled apart in the mixer, the lubricant or protective colloid is compounded through the mass, gradually insulating the particles from each other. When this is thoroughly accomplished a water dispersion is the final result with all the rubber hydrocarbon particles possessing the freedom which they originally had in the latex.

The officers and staff of Dispersions Process, Inc., are: J. K. Mitchell, chairman of the board; John A. Stevens, Jr., president; R. S. Rauch, vice-president and general manager; H. W. Chaudoin, secretary-treasurer; G. P. F. Smith, assistant treasurer; Thomas G. Richards, sales development engineer; and Dr. A. E. Barnard, chief chemist.

World Exports of Rubber Hose

THE United States continues to maintain a dominant position in the world trade in rubber hose and, according to a recent report of the Department of Commerce, is supplying 44 per cent of the world's requirements. Germany is next with 22 per cent while the United Kingdom exports 13 per cent of the total. The following table, prepared by the Department of Commerce, shows the comparative figures for the two last years:

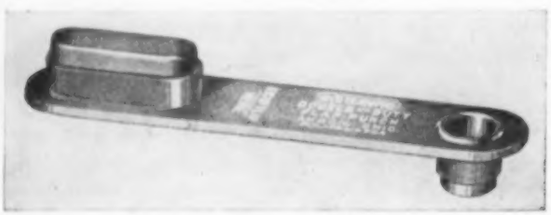
World Exports of Rubber Hose

Country	1926 Quantity	1926 Value	1927 Quantity	1927 Value
	Pounds		*Pounds*	
United States	6,124,960	$2,523,402	7,117,943	$2,670,839
Germany	3,258,173	1,576,408	3,593,622	1,640,007
France [1]	1,615,000	658,958	1,681,762	565,657
United Kingdom	2,067,520	1,157,419	2,092,160	1,128,047
Canada [2]	665,770	272,966	675,515	256,696
Italy	404,434	185,636	[3] 283,236	[3] 121,128
Austria	519,924	226,668	[4] 519,924	[4] 226,668
Belgium	220,160	81,565	236,269	74,170
Czechoslovakia	22,481	15,688	36,000	[4] 24,480
Total	14,898,422	6,698,710	[5] 16,236,431	[5] $6,707,692

[1] Estimated on basis of units other than reported here.
[2] Volume estimated from reported value.
[3] Estimated on basis of partial returns.
[4] Figure for 1926, that for 1927 not being available.
[5] Estimated.

Double Duty Flap Punch

THE Mohawk Rubber Company, Akron, is distributing to its dealers and tire repair stations a Double Duty Flap Punch made of fine tool steel which is claimed will save time, flap stocks and insure clean cut holes of the correct size and shape. The directions for the use of the punch are given as follows: After cutting the proper length flap



Double Duty Flap Punch

the cutting surface of the oval punch is placed over the center of one end of the flap. One blow directly on top of the oval punch completes the operation. For the round hole the punch is reversed and the operation repeated on the other end of the flap. The punches are distributed at a nominal cost either through the Mohawk branches or they can be procured from the Repair and Accessories department of the company at Akron.

New Type Hose Nozzle

A SMALL hose nozzle machined from a solid brass rod is the latest addition to the products of the Clark Manufacturing Company, 427 N. 13th Street, Philadelphia, Pa. Not being cast or stamped, it is unbreakable and cannot leak. It is arranged for one-hand control and will throw a powerful full stream, coarse or fine spray or trickle. It is being marketed under the trade name of "Giant Junior" and retails, with a rubber washer, at 35 cents. While it stands only 1½ inches high, the manufacturers claim it will perform satisfactorily all the work of the larger type nozzle in auto washing, garden work and the like. The nozzles come in attractive cartons for counter display and are packed a dozen to the box.

Tensile Properties of Soft Rubber Compounds at Temperatures Ranging from —70 Degrees to + 147 Degrees C. By R. F. Tener, Asst. Chemist, S. S. Kingsbury, Junior Chemist, and W. L. Holt, Physicist. Published by Bureau of Standards, Department of Commerce, Technologic Paper of the Bureau of Standards, No. 364. United States Government Printing Office, Washington, D. C. Price 10 cents. 1928. 14 pp.

The paper gives the results of tensile tests of six rubber compounds when tested at temperatures ranging from —70 degrees to +147 degrees C. Photographs are included to show the apparatus employed and the methods used are described. The results are shown in 13 graphs. The first six show tensile strengths and elongations at break for each compound, the second six stress-strain data, and the last one tensile products. The results show that temperature has a pronounced influence on the tensile properties of rubber.

At low temperatures rubber becomes rigid with an increased tensile strength and at high temperature it possesses practically no tensile strength. The various rubber compounds investigated show the same type of behavior with changes in temperature. Differences due to compounding ingredients are differences in degree rather than in kind. The magnitude of the changes in rubber compounds due to temperature shows that the effect of temperature is a feature which should be given consideration in the design of rubber articles which are used at other than normal temperatures.

10 YEARS AGO

Items Reprinted from April 25, 1918, issue of The Rubber Age

AKRON is the first city to establish a cooperative salvage office in an effort to comply with the request of the Commercial Economy Board of the Council of National Defense, to conserve all waste. . . A reduction of crude rubber imports is expected as a result of a conference called at Washington between crude rubber importers and the Shipping Board in an endeavor to conserve cargo space for war needs. . . The Quartermaster General of the Army issues complete specifications for rubber footwear for the army. . . The special Liberty Loan Committee of the Rubber Industry of Greater New York has received subscriptions totalling $2,805,000 for the Second Liberty Loan. . . The War Trade Board rules that no further licenses will be granted for exportation of scrap rubber except to Canada. . . Sixty Goodrich employees, each a Liberty Bond holder, marched with the largest American flag in the world, purchased by the B. F. Goodrich Company, in the Liberty Loan parade at New York City. . . John C. Weston is elected vice-president of the United States Tire Company. . . Hood Rubber Company shows gross sales for 1927 totaling $18,575,765. . . The demand for most lines of mechanical rubber goods is heavy and increasing in volume. . . Crude rubber grades move up in price 8 to 10 cents per pound from April 1.

The GUANIDINE Accelerators—
History and Litigation

Legal and Patent Tangle Involving the Well-Known Rubber Accelerators DPG, DOTG and TOTG Becoming Clarified—Materials Now Widely Used in the Rubber Industry and Continue in Popularity

THE long period of litigation extending from 1923 to date and involving a number of the widely used guanidine accelerators is nearing an end. The final decision on the Weiss patent No. 1,411,231 on the use of di-substituted guanidines as accelerators of vulcanization was made on April 9, 1928, when the U. S. Supreme Court declared the patent invalid.

Likewise, the recent interference proceedings on the patent application on DOTG and TOTG by Winfield Scott, Ralph V. Heuser and Morris L. Weiss resulted in a decision on April 2, 1928, in which the Court of Appeals of the District of Columbia recognized the claims of Winfield Scott (assignor to duPont) on DOTG (diorthotolylguanidine) and those of Ralph V. Heuser (assignor to A. C. Burrage, Sr.) on TOTG (triorthotolylguanidine). The patents in each case will now be granted to the respective parties as designated by the court. An appeal can be made by Weiss, or his assignee, the Dovan Chemical Corporation, on these two patents when issued, but whether such action will be taken is not known at this time.

Appeal Argued on Hoffmann-Gottlob Patent

The other litigation seemingly near an end is that on the Hoffmann and Gottlob patent (U. S. No. 1,149,580) which maintains that DPG and hexamethylenetetramine are ammonium compounds having a dissociation constant greater than 1×10^{-8} within the meaning of claims 1 and 4 of the patent in suit. The first suit in this litigation, which is between the Grasselli Chemical Company (as assignee of the patent) and the National Aniline & Chemical Company, resulted in a decision in January, 1927, in the U. S. District Court, Southern District, N. Y., favoring National Aniline. In substance this meant that the manufacture of DPG and hexa by National Aniline did not infringe the Hoffmann and Gottlob patent. The appeal in this case was heard on April 17 and 18 by the U. S. Circuit Court of Appeals and a decision is expected within a few months.

In its decision declaring the Weiss patent on di-substituted guanidines invalid, Chief Justice Taft of the U. S. Supreme Court briefly reviewed the history of vulcanization and the use of accelerators. Though the court conceded that Weiss invented the cheap process of making DPG, it did not find that Weiss had been the original discoverer of DPG as a useful accelerator of vulcanization. The court found that the paper read on September 2, 1919, by George Kratz at the Philadelphia meeting of the American Chemical Society on the action of DPG and TPG disclosed the importance of DPG as an accelerator thus proving that priority of the Weiss claims in his patent application made on November 12, 1921, were not valid. An article by A. Dubosc, published July 15, 1919, also discussed the use of di-substituted guanidines as accelerators, a fact which would defeat the claims applied for by Weiss, the court stated.

Though Weiss was credited with some experiments with DPG in 1918 and early in 1919 the court found that the experiments of Kratz in 1916 at the Norwalk Tire plant and in 1917 at the Falls Company had already shown the value of DPG as an accelerator. The court further stated "It is a mistake to assume that reduction to use must necessarily be a commercial use. If Kratz discovered, and completed, as we are convinced that he did, the first use of DPG as an accelerator in making vulcanized rubber, he does not lose his right to use this discovery when he chooses to do so for scientific purposes or purposes of publication or because he does not subsequently sell the rubber thus vulcanized or use his discovery in trade or does not apply for a patent for it. It is not an abandoned experiment because he confines his use of the rubber thus produced to his laboratory or his lecture room. It is doubtless true that Kratz by his course in respect to his discovery as to the use of DPG has abandoned any claim as against the public for a patent, but that is a very different thing from saying that it was abandoned as against a subsequent discoverer or patentee.

"The conclusion we reach then is that, so far as this record shows, the first discovery that DPG was a useful accelerator of the vulcanization of rubber was made by George Kratz and not by Weiss."

The award of patent rights on DOTG to Winfield Scott and TOTG to Ralph V. Heuser, with the claims of M. L. Weiss entirely discarded by the District of Columbia Court of Appeals, was based on priority of experiments and reduction to practice by the two parties finally awarded patent rights. Scott testified that he had disclosed the invention of DOTG to Dr. Grafton of the Quaker Rubber Company on September 20, 1920, and had actually produced this material in February, 1921, and incorporated it in rubber-test pieces in March, 1921.

The court stated, "The evidence on behalf of Scott satisfies the court first, that Scott conceived the use of DOTG as a rubber accelerator on the 20th of September, 1920; second, that he actually reduced his conception to practice by using DOTG as an accelerator on March 15, 1921, and by testing the vulcanized product on March 16, 1921, in order to determine the efficiency of DOTG as an accelerator."

The TOTG award to Heuser was based by the court on the fact that on June 16, 1920, Heuser, who was employed by the Atlantic Dyestuffs Co., started to work on TOTG and the first sample was produced in July, 1920. This was tested and found to be satisfactory by A. C. Burrage, Sr., with the result that a plant was established in November, 1920, to manufacture TOTG. Patent application was filed several months later by Heuser, on January 27, 1921.

Early History of Guanidines

The first substituted guanidine was synthetically produced by A. W. Hoffman in 1848 by passing dry cyanogen chloride gas into anhydrous aniline. The resulting product was diphenylguanidine hydrochloride, which he called melaniline because of its analogy to the melamine discovered by Liebig.

In 1855 Cahours and Cloez, while studying the action of cyanogen chloride on ammonia bases, observed that when dry cyanogen chloride is passed into a solution of aniline in anhydrous ether, aniline hydrochloride and cyanic anilide are formed. Equal molecular parts of these in an alcoholic solution, when heated, produced Hoffman's Melaniline.

In 1869 Hoffman synthesized diphenylguanidine by a method entirely different from the one he used 21 years before. He desulfurized thiocarbanilid with lead oxide in a solution of alcoholic ammonia. The resulting product corresponded in all its properties with his former melaniline, with the exception of melting point. His original melaniline, fused at 120° to 130° C., while the new product melted at 147° C. Hoffman then concluded that the new product was an isomer of his former melaniline. (*Continued on next page*)

In 1875 Carl Forster published a paper on the conversion of substituted thioureas into guanidines. Forster's method was desulfurizing thioureas by means of mercuric salts in the presence of ammonia. The product he obtained was identical with the second product of Hoffman's.

In 1876 Weith and Schroeder published the results of their investigation of the two guanidines. They prepared the guanidines of Hoffman's first and second methods and subjected them to a rigid examination of their properties and reactions. They found both substances to be identical and they concluded that there is only one diphenylguanidine and that is the symmetrical one. Hoffman later confirmed the results of Weith and Schroeder. In 1879 Rathke studied the different methods for preparing these guanidines.

For 71 years DPG remained one of a number of freak compounds that were exhibited only as chemical curiosities; it had absolutely no known commercial value. It was in the period from 1917 to 1919 that both Kratz and Weiss discovered the possibilities of DPG as an accelerator but the first time that it was offered commercially to the rubber industry was in 1920 after M. L. Weiss had interested Messrs. H. S. Doty and Van Lear Woodward of the States Metal Co., of N. Y., and convinced them that DPG had exceptional merits. They founded the Dovan Chemical Corporation for the express purpose of manufacturing and selling this material. In May, 1920, a small factory was equipped which, by August, succeeded in producing small amounts of the new accelerator. Because of lack of capital, the operations and apparatus of this plant were exceedingly crude and production was slow.

The lack of capital was only one of many difficulties that arose. The rubber companies were slow to recognize the value of the new accelerator and it was only after several months of extensive efforts that it was put across and a demand created. In the fall of 1921 the Dovan factory burned to the ground and other companies, realizing the value of the new accelerator, began to manufacture DPG. However, a new factory was soon equipped by Dovan and they again resumed the manufacture of this product.

DPG Patent Granted to Weiss

In the meantime Dovan had applied for, and later obtained, patents in several countries on the use of DPG as an accelerator for the vulcanization of rubber, and on a process for its manufacture. This patent was filed on November 12, 1921, by Weiss in the United States and was granted on March 28, 1922. It is known as U. S. Patent No. 1,411,231, now invalid according to the recent U. S. Supreme Court decision.

Under the grants of this patent, Dovan licensed the Roessler & Hasslacher Chemical Company to manufacture DPG but the National Aniline & Chemical Company claimed that the Weiss patent was invalid and therefore started the manufacture of this product. The result of this action was that Dovan instituted a suit against National Aniline in the District Court of New York and won in a decision handed down in January, 1923. An appeal was taken by National Aniline and in May, 1923, the former decision was reversed and National Aniline obtained a verdict from the New York Court of Appeals.

Meanwhile Grasselli had obtained control of U. S. Pat. No. 1,149,580 granted to Hoffman & Gottlob covering certain ammonium compounds. Dovan and Roessler & Hasslacher were licensed to manufacture DPG under this patent. National Aniline, however, decided to test the validity of this patent by manufacturing DPG and accordingly Grasselli started suit against National. This case attracted wide attention in the industry and drew many prominent rubber chemists as witnesses. It was argued in the U. S. District Court, Southern District of N. Y., from Feb. 17, 1926, to March 5, 1926. The decision, upholding the stand of National Aniline, was announced in January, 1927. Grasselli filed a notice of appeal and submitted briefs in March, 1928. This appeal was argued on April 17 and 18 and a decision is not expected for several months.

The Dovan Chemical Company acting in the belief that the decision of the N. Y. Court of Appeals in its case against National Aniline was not justified by the facts, brought suit against the Corona Cord Tire Co., East Butler, Pa., as a user of DPG. This was an attempt to again validate the Weiss patents and in February, 1926, the court held that Weiss could not be declared the discoverer of DPG as an accelerator and therefore held the patent invalid.

Then, on appeal, Dovan won a reversal of this decision on December 8, 1926, when the Circuit Court of Appeals for the Third Circuit stated that it was satisfied that "Weiss was the first to instruct the rubber art in this mode of rubber vulcanization and that up to his work, the rubber industry had made no use of DPG in vulcanization and no one had therefore disclosed to the art or instructed it how DPG could be practically produced or, of course, practically used."

This decision created the following situation: Dovan won its suit in January, 1923, against National Aniline; National Aniline won from Dovan in May, 1923, on appeal; Corona Cord Tire won against Dovan in February, 1926, and Dovan won an appeal in December, 1926. The final step was the victory scored by Corona Cord Tire in the Supreme Court on April 9, 1928, thus ending all litigation on the Weiss patent.

Tire Size Simplification

MEMBERS of the National Automobile Chamber of Commerce, which includes practically every automobile manufacturer in the United States with the exception of the Ford Motor Company, have been asked to vote on a tire simplification program which would reduce the number of sizes of balloon tires for 1929 automobile requirements to seventeen. The Chamber, together with the Rubber Association of America, Inc., the Society of Automotive Engineers and the Tire & Rim Association, has been active in the prolonged effort to arrive at an abbreviated list of tire sizes which would mean economy for everyone concerned, but which would not hamper the automotive engineer in proper car design.

The latest move has been to work out one program consolidating the suggestions of the R.A.A. and the S.A.E. This was tentatively done on March 26 at a meeting in Detroit attended by representatives of the four organizations, and it is this program which has been submitted to automobile manufacturers for final approval. The list is as follows:

Rim Diam.	Tire Cross Section							
	4.50	4.75	5.00	5.25	5.50	6.00	6.50	7.00
18"				5.25–18 28x5.25		6.00–18 30x6.00	6.50–18 30x6.50 30x6.20	7.00–18 32x7.00 30x6.75
19"		4.75–19 28x4.75	5.00–19 29x5.00 28x4.95	5.25–19 29x5.25	5.50–19 29x5.50	6.00–19 31x6.00	6.50–19 31x6.50 31x6.20	
20"		4.75–20 29x4.75	5.00–20 30x5.00 29x4.95		5.50–20 30x5.50	6.00–20 32x6.00 30x5.77	6.50–20 32x6.50 32x6.20	7.00–20 34x7.00 32x6.75
21"	4.50–21 30x4.50							
Rim* Section Width	2.75 Flat Base or Drop Center	4	4	4	4	4½	4½	5
Max. Tire Width on Rim	4.75	4.85	5.15	5.35	5.60	5.95	6.40	6.90

*Rim widths given are nominal except the 2.75" size which dimension is the actual width between flanges.

The above list is presented in accordance with the new scheme of designating tire sizes. It was voted that hereafter tires should be *marked with the cross-section followed by the diameter of the rim on which the tire is to be used,* and beneath in smaller figures should be shown the former name size of the tire. This decision was reached after discussion of the commercial problem involved and the confusion that would arise if the actual outside diameter were used in marking tires. For example, the 31 x 6.00 will be marked 6.00-19 with the former name size, 31 x 6.00, appearing immediately beneath. The new marking includes the two main factors—cross-section and rim diameter. The reference to the size or sizes replaced will identify the tire with the new marking in terms of the old.

A final announcement will be made by the N. A. C. C. after a general response from the membership has been received. No obstacle is seen in the way of getting complete approval for the simplification program.

New Process *for the* Curing *of* Cord Tires *and* Molded Tubes[1]

The Use of Carbon Dioxide in Connection with Steam Appears to Have All the Advantages of the Air-Glycerol and Water Processes Without Any of the Disadvantages—Tubes Cured More Quickly by This New Process

By HENRY R. MINOR,

GENERAL CARBONIC COMPANY, NEW YORK

MODERN requirements in the curing of cord tires call for process improvements which will increase the uniformity of the product and permit equal quality in the larger sizes. Of the many factors bearing on this problem, curing conditions are probably of first importance. The manner in which a tire is cured not only affects the uniformity of the product, but is a substantial item of the tire cost. Many tires are cured today in pot heaters holding from 20 to 30 tires piled one on top of the other, the green tires being placed in iron or steel molds and an expansible air bag inserted within each tire, the air-bag valves being connected to a central manifold and the required pressure being furnished by air, hot water or other medium.

There are two well-known processes—the air-glycerol process and the hot water process. Not so well known is the carbon dioxide process which has made interesting progress in recent years because of sound theory and improvements in the process itself. This process has interested many because the bags are dry at all times, a more uniform cure is obtained than with air-glycerol and the air-bag life seems to be enhanced. On the other hand, the objectionable feature of gas leakage into the steam of the vulcanizer, which is a complaint against the air-glycerol process, is not overcome. Furthermore, the carbon dioxide process offers no means for adding heat to the inside of the tires. The slight saving over the air-glycerol process is too small to warrant any extensive installation in an industry where a process may see a complete change in the short space of one year.

Accordingly, an effort has been made to provide a new process having the advantages of both the air-glycerol and the hot-water processes and the disadvantages of neither, as applied to the curing of cord tires and molded tubes. The process consists in first bringing a part of the pressure up to a predetermined point with an inert gas, such as carbon dioxide, then shutting off the gas and turning on steam at the curing pressure and leaving it on throughout the period of the cure. The first effect of the steam is to heat the inert gas, causing it to expand and thus cutting down the partial pressure of the steam that can enter the bag, thereby insuring any desired inner temperature which may be easily computed for any particular case. The inert gas acts as a dry preservative for the inner surface of the air-bag, preventing oxidation; and it also acts as an automatic valve controlling the amount of heat units that may be added to the bag. Phrased differently, a means is proposed which permits obtaining any temperature at any desired pressure always under inert gas conditions; a means which is applicable not only to curing of tires, molded tubes, and other processes in the rubber industry, but also to many processes in other industries.

As a typical example, assume that tires are being cured at 260 degrees F. or 20 lbs. gauge, and that the pressure maintained on the air-bag and thence to the tire in the mold is 200 lbs.; required the proper gauge pressure of the carbon dioxide which when backed by 200 lbs. of steam will maintain the same curing temperature within the air-bag as exists without the mold.

200 lbs. gauge = 215 lbs. absolute.

260 degrees F. = 20 lbs. gauge or 35 lbs. absolute.

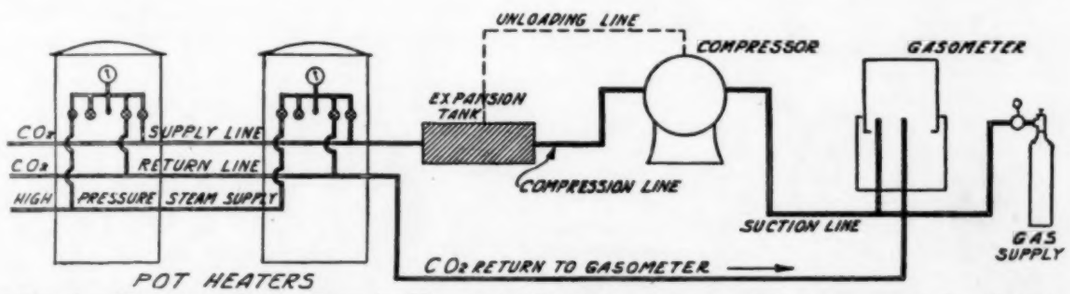
Then 215 — 35 = 180 lbs., which is the partial pressure of the carbon dioxide under the desired conditions.

Assume original temperature of carbon dioxide as 100 degrees F. = 560 degrees absolute, and final temperature of carbon dioxide as 260 degrees F. = 720 degrees absolute.

Then $180 + \frac{560}{720} = 139.86$ or absolute pressure of carbon dioxide at 100 degrees F., which = 125 lbs. gauge. That is, to obtain 260 degrees F. within air-bag, carbon dioxide should be supplied at 125 lbs. gauge and backed by the 200 lbs. gauge of steam.

As the temperature and pressure within the closed volume decrease because of heat transfer, additional steam supply enters, thus maintaining pressure equilibrium. Temperature equilibrium is dependent on partial pressure of

[1]Abstracted from the March, 1928, issue of Industrial and Engineering Chemistry.



Plan Showing Method of Curing Tires by Means of CO_2 Gas and Steam with Recovery of Gas for Re-use

steam and is best determined experimentally for each general case.

The extremes of this process may be considered as ranging from inert gas at atmospheric pressure and steam at any desired pressure, in which case the temperature within the container would be practically the temperature of the maintaining steam, to the condition where the inert gas is supplied at the same pressure as the steam, when, of course, there would be no transfer of heat units. In between there is any desired degree of variation. In this method the gas is used in such fashion as to make of itself an automatic valve controlling, not only its own temperature, but also the number of heat units which may be added to it and thence to a neighboring medium such as an article to be cured or a chemical reaction to be effected. In other words, by proper variation heat units may be added with but a small amount of condensation from the steam or there may be a sufficient flow of steam over an extended period of time such that a considerable condensation of moisture may take place.

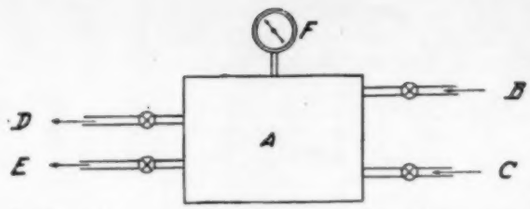
It is impracticable to use air in place of inert gas in this process, as the oxidation of the inside of the air-bag would be greatly promoted by the increased temperature obtained.

Temperature equilibrium is obtained immediately and continues substantially constant throughout the cure. The reason for this is obvious. At the start of operations there is direct contact between the inert gas and steam at an initial temperature higher than that represented by the final partial pressure which results from the expansion of the inert gas, and this intimate mixing takes place within an insulated space, thereby insuring a rapid rise of temperature. The partial pressure of the steam must, however, be high enough to compensate for such heat transfer as may be taking place, and it should be borne in mind that such small condensation as takes place serves to decrease the total volume, increasing slightly the partial pressure of the inert gas and decreasing the partial pressure of the maintaining steam.

Thermocouple readings taken within an air-bag indicate that the temperature of the pressure gas is very sensitive to changes in steam pressure.

In the curing of molded tubes it is desirable to have the initial pressure of the gas sufficiently high to form the tube because of the rapidity of temperature rise within the tube.

Carbon dioxide as used in this process should increase air-bag life. This gas has been used in the past on any and all kinds of air-bags on the theory that with an inert gas compounding played no part. On the contrary, it has been proved in practice that an air-bag heavily loaded with gas black does not react favorably with carbon dioxide, the bag becoming porous and the gas black at curing temperatures acting to break down the carbon dioxide. Iron oxide acts in a somewhat similar manner. Moisture is essential to the securing of the best results from carbon dioxide. Practically all tests in the past have been made with gas liquefied at high pressure in cylinders and the users



A—Closed vessel
B—Source of inert gas supply as CO_2
C—High pressure steam supply
D—Release to atmosphere
E—To recovery apparatus
F—Gage

Temperature Pressure Control by Means of Inert Gas and Steam

have not stopped to consider that this product was an excellent dehydrating agent. So long as the air-bag is not used beyond seventy-five heats it is not so important, but beyond this point the cumulative effect of a dehydrating agent becomes increasingly evident both in the superficial appearance of the interior of the bag and in its physical characteristics.

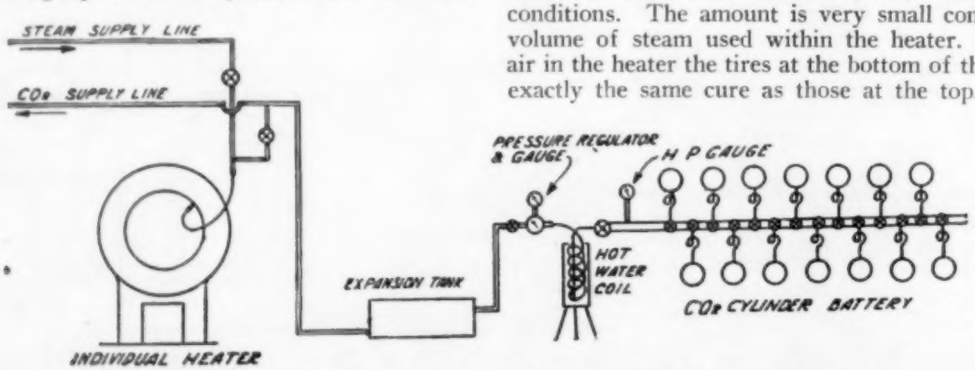
Carbon dioxide used only in the initial cure of an air-bag has been found by laboratory test to increase the modulus of elasticity about 20 per cent as compared with the usual air cure and the superficial appearance after being used with air-glycerol subsequent thereto would indicate a continuation of this marked improvement.

Condensation is of importance, particularly in molded tubes. Only so much condensation can take place as is necessary to bring the weight of rubber up to the curing temperature. In the case of a six-inch molded tube, assuming an equal amount of heat from both inside and outside, the condensation would amount to approximately five ounces of water, all of which would quickly evaporate on release of pressure. Table I gives the results of some prelimina tests on molded tubes.

The amount of inert gas used in this process is relative small and the cost negligible. In general, only one-third of the pressure is supplied with gas, and if desired two-thirds of this may be easily recovered for re-use.

The inert gas used in this process is ample in amount for complete protection of the inside of the air-bag. There is no accumulation in the air-bag; consequently the cure does not vary from bag to bag as in the air-glycerol process. Carbon dioxide has long been known by the rubber industry as not only an economical inert gas easily applied, but as having a definite preservative effect on the rubber itself. Apparatus has recently been developed which greatly facilitates its use.

By substituting steam for the air ordinarily used in maintaining pressure, certain economies are effected; air costs from 2/3 to 1 cent per tire, whereas a similar amount of steam costs but 0.002 cent. Moreover, the leakage of air into heaters is eliminated; the importance of this factor has already been emphasised. Leakage of steam from the manifold connections would benefit rather than harm curing conditions. The amount is very small compared with the volume of steam used within the heater. By eliminating air in the heater the tires at the bottom of the heater receive exactly the same cure as those at the top. Hitherto this



Plan Showing Method of Curing Molded Tubes with CO_2 Gas and Steam

has been one of the main points in favor of the hot-water process.

TABLE I.—TESTS ON MOLDED TUBES CURED ON CARBON DIOXIDE
[10-*minute cure at* 45 *lbs.* (3.1 *kg. per sq. cm.*) *pressure.*]

Pressure	Load at 200 0/0 Elongation		Load at 400 0/0 Elongation		Tensile at Break Lb./-in.²	Kg./-cm.²	Elongation at Break 0/0
	Lb.	Kg.	Lb.	Kg.			
75 lbs. (5.3 kg.) air	400	181	1525	692	3025	213.7	730
75 lbs. CO_2	450	204	1600	726	3100	218.3	730
37.5 lbs. (2.7 kg.) CO_2 + 80 lbs. (5.5 kg.) steam	500	227	1700	732	3375	237.7	730
AGED 6 DAYS IN GEER OVEN							
75 lbs. air	575	261	2050	931	3400	239.4	700
75 lbs. CO_2	575	261	1975	897	3575	251.7	730
37.5 lbs. CO_2 + 80 lbs. steam	600	272	2125	965	3900	274.7	730

The pressure means, being gaseous, are completely evacuated by the blow-down at the end of cure. It is not necessary to collapse the air-bags by a costly vacuum system as in the hot-water process with its loss of valuable time and its weakening effect on the bags.

This new process permits the addition of as many or more heat units than may be added by the hot-water process. Assume an air-bag of ½ cubic foot volume. If hot water is added at a temperature of 350 degrees F. and during the cure drops to 250 degrees F., the total number of B. T. U.'s available is $\frac{62.5}{2} + 100 = 3125$. If in this new process only 4 lbs. of steam are condensed, 4000 B. T. U.'s are released for heating and there is a vast difference between removing 30 odd lbs. of water and a matter of 4 lbs, most, if not all, of which may evaporate on release of pressure. As a matter of fact, fewer heat units need be added to the bag because of reduced thickness required as compared with general hot-water practice.

It was recently stated [2] that if heat were transmitted equally to two sides of a rubber slab ½ inch thick it would take 15 minutes for the center of the slab to reach the impressed temperature (in this case 280 degrees F.), but if the slab were 1 inch thick an hour would be required. This emphasizes the advantage of the relatively thin bag that may be used in the new process and its bearing on the rate of heat transfer. A further important fact is that the conductivity of a mixture of one-third gas and two-thirds steam is much greater than that of static water.

The uniformity of heat transfer compares favorably with the hot-water process. Pressure being supplied by steam, considerable leakage may exist without affecting the cure, whereas with a liquid medium a small leak will cause pronounced change in pressure conditions. In the hot-water process owing to change in water density during progress of cure, there is a marked difference in the temperature of the water at different points in the bag, while at the top there is a variable pocket of air and steam.

In the new process temperature conditions are practically constant, owing to rapid diffusion of gases mixed under conditions of curing temperature and pressure, and if the particular conditions applied call for a large addition of heat units it is simple to secure a continuous movement of the steam-gas mixture circumferentially.

Molded tubes are now being cured by this process with a 25 per cent reduction in curing time and without any moisture remaining in the tube. The quality of molded tubes cured with carbon dioxide and steam is outstanding as compared with tubes cured by any other process. Under the severe treatment accorded molded tubes by the 'buses, this superior quality is a factor of first importance.

[2] Blaker and Shade, India Rubber World, 76, 313, (1927).

Schaphorst's CHATS *with the* ENGINEER

By W. F. SCHAPHORST, M.E.

Figuring Steam Leaks

ALTHOUGH steam used in rubber goods plants does not always leak through round holes, it is, nevertheless, the general practice to compare and discuss steam leaks in terms of the round hole. Thus we may say of a leak—"It is equal to a leak through an eighth inch hole," etc.

To compute the cost of a leak of this kind, a first-class rule is: "Square the diameter of the opening in inches, multiply it by the absolute steam pressure in pounds per square inch, then by the cost of fuel per ton in dollars, and then by 0.08." The result is the cost per day in dollars.

This rule is based on Napier's much used formula which tells us that to find the weight of steam flowing through a given orifice into the atmosphere per second we have merely to multiply the area of the orifice in square inches by the absolute steam pressure in lbs. per sq. in. and then divide by 70. Also, in developing the above rule, it was assumed that one pound of fuel will evaporate six pounds of steam.

EXAMPLE: If the diameter of leak is ¼ in., cost of coal $6 per ton, and steam pressure 320 lbs. absolute, the loss will amount to $9.60 per day. In one year, leaking day and night continuously, the total cost would be $3,500.

Verticalator

THE name "elevator" is objectionable to some people because it does not include the downward movement. Elevators not only elevate—they also lower people, boxes, packages, castings, etc. I am told that in England the word "lift" is used instead of elevator. But the same criticism applies to the English term. It is almost as ridiculous to say to a person, "Take the elevator down," as it would be to say to him, "Watch out, or the pulmotor will kill you."

A prominent concern in the United States advertises that its business is "vertical transportation." Very good. You can't criticize that expression because it takes care of both directions—up and down. My suggestion is, then, that instead of "elevator" or "lift" we say "verticalator."

Repair Parts

IT is not uncommon for manufacturers to receive letters from users of their products, in which the manufacturer is severely condemned for not having repair parts in stock, regardless of the part that needs replacing or repairing.

This is an unfortunate circumstance that can hardly be avoided by most manufacturers where the machine is of special character or where it is a machine that was developed through a sort of process of evolution.

In fields where rapid progress is being made, the design today is often just a little different from that of yesterday. In the course of a year the change may be so marked that the latest type loses all resemblance to the first.

The only thing that can be done in making renewals in cases of this kind, then, is to refer back to the drawings and build up the piece or pieces as a special order. If patterns are still in stock and if the piece is a rough casting, it is not very difficult to make the repair, but where considerable machining must be done the repair is usually expensive.

Leader of the Rubber Pool

THE story of the rise of John J. Raskob within twenty-eight years from a stenographic job paying $7.50 per week to a position of leadership in the industrial life of the United States would make one of the most absorbing of American business biographies. In 1900, dissatisfied with his job at $7.50 a week, he asked for a raise and was refused. In casting about for another connection he learned through a friend that Pierre S. duPont was looking for a private secretary. Mr. Raskob wrote that he would take the job for $1,000 a year and was hired.

JOHN J. RASKOB

A few years later, Mr. duPont, whose varied interests included the presidency of a street railway company in Ohio, bought another street railway in Dallas, Texas, and made his private secretary treasurer of it. In the meantime, a family feud within the duPont organization had been settled and upon the election of Pierre S. duPont to the presidency of the E. I. duPont de Nemours Company, Mr. Raskob was made treasurer of that organization too.

It was Raskob's keen financial mind that first saw the possibilities of diverting the huge profits of the duPont company, made during and immediately after the war, to purchasing a controlling interest in General Motors Corporation and it has been his guiding genius since that has brought that corporation to the front of the world's greatest industrial enterprises.

The varied interest of General Motors Corporation must necessarily include connection with the crude rubber market and it is, therefore, not surprising to find Mr. Raskob heading a special committee of the National Automobile Chamber of Commerce and organizing the famous American rubber "pool," now functioning with a working capital of $100,000,000.

Dusting With Zinc Stearate

ZINC stearate is finding favor as a dusting powder in place of talc as it is less bulky and disappears or burns off during vulcanization, avoiding marking of product and loss of adhesion. It must be used with care, however, as it is liable to cause choking and distress in the lungs if inhaled too freely. But when applied from a dusting bag there is practically no danger, and it has proved satisfactory in a number of instances. Among them are heels. Strip blank stock from which heel blanks are cut automatically at high speed is dusted with zinc stearate to prevent the blanks sticking together in the containers in which they are carried to the pressroom. Unlike talc it does not make the face of the finished heel streaked and white if not removed before molding.

In making unwrapped tubes by the pole method, it is necessary to have the stock fairly dry to handle. Zinc stearate preserves the tack and makes the stock easy to handle.

In making heavy cashmerette gaiters adhesions between the plies of the vamp are very important, as the shoe gets its greatest amount of flexing at this point. Dusting the coated stock with zinc stearate makes it easy to handling in cutting and preserves the tack of the coating so that when the cement coating is applied it has a firm foundation.

Increasing the Life of Airbags

PROBABLY more fish stories have been told by rubber superintendents and chemists about the number of heats they get out of their airbags than on any other point. A recent survey disclosed that fifty heats is a good average in the first life of the bag. The bag can then be buffed and recovered indefinitely and, perhaps, run up to two hundred cures, but of course, this involves more labor and material than contained in the original airbag.

Experience has shown that the use of ammonia in the first cure of an airbag helps to prevent oxidation. Then, of course, we have the anti-oxidants which are coming into play, and the airbag is an excellent place to try out the various ones on the market to prove their worth, as there is no other stock which has to stand such rapid ageing as the airbag which goes through cure after cure.

Another point often overlooked which adds to or subtracts from the life of the bag is the percentage of stretch necessary to fill out the casing. Naturally, the less strain the bag is subjected to, the longer it will stand up.

The Annual Scrapping of Automobiles

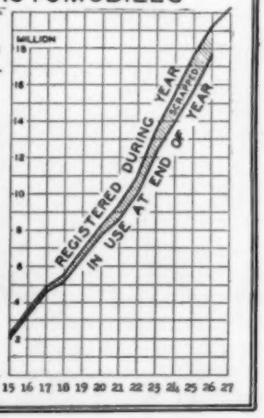
AUTOMOBILE registration figures published at the end of each year are not an entirely reliable guide to the size of the potential tire market on account of the scrapping of automobiles which takes place each year. Since these scrapped automobiles were registered at some time prior to their being discarded, the registration figure does not really indicate how many cars are in use.

The Cleveland Trust Company has recently undertaken to show how many passenger automobiles have been scrapped in recent years. The results are shown in the accompanying table and chart. The number of cars

PASSENGER AUTOMOBILES

Year	New cars added	Cars registered	Scrapped during year	In use at end of year	Gain in cars in use
1916	1,373	3,476	175	3,301	1,198
1917	1,591	4,892	170	4,722	1,421
1918	815	5,537	220	5,317	595
1919	1,520	6,837	254	6,583	1,266
1920	1,653	8,236	410	7,826	1,243
1921	1,146	9,272	609	8,663	837
1922	2,230	10,893	831	10,062	1,399
1923	3,146	13,508	1,138	12,370	2,308
1924	2,994	15,364	1,320	14,044	1,674
1925	3,435	17,479	1,782	15,697	1,653
1926	3,526	19,203	1,565	17,638	1,981
1927	2,666	20,304			

All figures in thousands



scrapped in 1927 cannot be stated exactly until the production, export and registration data for 1928 is available. However, it will be noted that an average of about 1,500,000 passenger automobiles were scrapped in 1924, 1925 and 1926. If it were assumed that at least that many were scrapped in 1927, the number in use at the beginning of 1928 would appear to have been 18,834,000.

THE GENTLEMAN FROM MINCING LANE reports current opinion in London's famous rubber market in every issue of THE RUBBER AGE

The London Letter

The Gentleman Talks About The Six Months to Come

LONDON, April 12, 1928.

THE cables have, of course, carried across to you the details of Mr. Baldwin's announcement that all restrictions on the export of rubber from the British East are to be removed on November 1st. Aside from expressions plainly having political bias one way or the other, I see two main points of view revealed in press and trade opinions. One is of bitterness that there is to be no return of the comfortable bull position of February 1st which was so suddenly shattered on February 8th by the announcement of the proposed Cabinet investigation, and the other is of reconciliation. The second was very well put by Lewis & Peat, Mincing Lane brokers, in their last weekly circular:

> "On the whole, the announcement has been received by the market with a sense of relief and, although prices may go lower, it is felt that the ultimate result will be in the best interest of British producers.
>
> "There is no doubt that the original restriction scheme saved the whole rubber plantation industry from ruin; it is now recognized that it should have been removed at the beginning of 1926, when it had served its purpose, but that is no reason why rubber shareholders should now blame the Government for not continuing a policy that might give them temporary relief, but which would eventually place them in a far worse position than they ever imagined."

What is past is past, and the interesting speculation now is with regard to the future. What is to transpire in the six and a half months lying between us and November 1st? Naturally, the first thought is, what will the Dutch do? A committee representing Dutch rubber growers came over to London on Monday—two days before the Government's announcement was made. The Rubber Growers' Association in London met them informally and appointed a committee to discuss the situation with the Dutch Committee after Easter. Then the Dutch sailed home again. So far as can be seen, their visit here only stimulated the curiosity of Londoners as to the effect of the British announcement on the Dutch attitude.

IT is generally accepted that the Dutch will not go in for any form of restriction for well-known reasons. That they are more amenable to the suggestion of some form of selling combination is also well known. But the best informed British opinion is skeptical of anything coming of Anglo-Dutch cooperation, simply because there is not much likelihood of a selling combination getting as much support in British and Dutch quarters as the Stevenson Scheme had. Therefore, the argument runs, if the Stevenson Scheme did not work, how can an Anglo-Dutch selling combination work? It would appear, therefore, at this early date, as if free competition is likely to hold the field from November 1st on.

Another factor on which there has not yet been time to develop views—the incidence of the Easter holidays immediately after Mr. Baldwin's announcement having interfered with speculation on this score—is to what extent British estates in Malaya will tap, over and above the quantities which they are permitted to export month by month without duty. The idea is that with restriction coming off on November 1st and with many estates having available excess labor, there will be a steady accumulation of stocks of rubber on the estates in preparation for release on or after November 1st.

It is held in certain quarters that many British estates have continued to keep fairly intact their labor organization on the basis of 100 per cent production on account of the difficulty of re-employing labor should the restriction percentage rise above 60. To the extent that this is true, it would, naturally, be possible for such estates to produce additional rubber in the fall of the year at a fraction of their ordinary costs. Of course, all of this is an attempt to look a considerable distance ahead, and "anything may happen in rubber." But should such accumulations begin to take place on the estates, surely such a cloud overhanging the market would provide a powerful incentive for both Dutch and British estates to combine to more nearly equalize supply to demand.

FAILING any such special arrangements, it looks as if some of the weaker companies would be forced out, and the screws would be put on all estates to produce at lower costs. After all, restriction rested heaviest on the most efficient companies for the benefit of the weaker. Such a policy may be good charity, but it is not good business. What the world expects from the British and Dutch rubber-growing industries is a steady cheapening in the cost of raw rubber—a price movement in step with, not contrary to, the general decline in world price levels.

The British Government is being accused on all sides of having bungled the entire handling of the rubber restriction question. It is rather interesting to note that the same gentlemen who a few years ago enthusiastically welcomed the interference of the Government in their business are now finding their chief consolation in the fact that "well, after we get our house somewhat in order again we shall at least not have a stupid Government mixing in our affairs." Although caustically expressed, that is really the sound view to take, and the pity is that it was not taken sooner.

Rubber restriction is being called the most unfortunate experiment of its kind in recent years. It is certain that its effects will be felt by the British plantation industry for a long time to come. The share that the Dutch have in the rubber producing industry has, of course, been enormously increased. Most of the acres planted as a result of restriction have not yet affected the market, but they will rise up like ghosts to plague the British for many years to come.

Yours faithfully,

THE GENTLEMAN FROM MINCING LANE.

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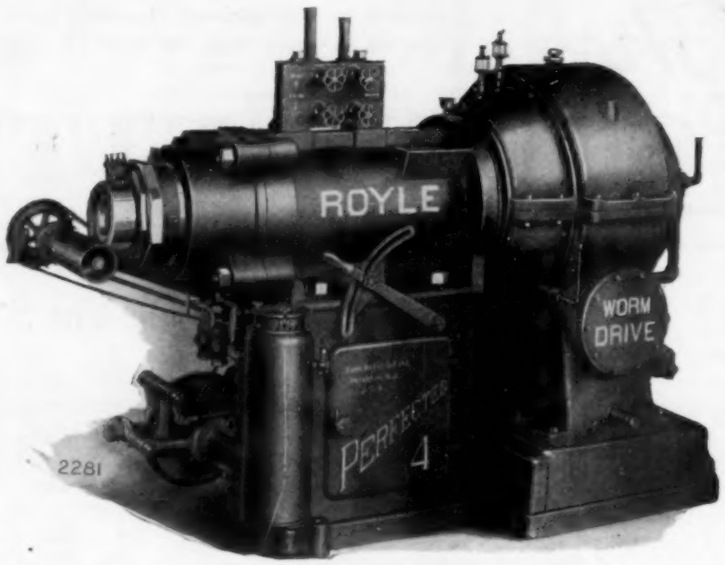

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EDITORIAL COMMENT

Reclaimed Rubber

THE lowered price of crude rubber has naturally brought with it the idea of revising manufacturing formulas in the rubber industry to use a higher percentage of fresh natural rubber and less of reclaimed rubber. It has often been said that this transition would begin when the spot price of crude rubber had declined to 25 cents. Now that the price is down to almost ten cents below that figure it might be reasonable to believe that the change would be greatly accelerated.

Yet a closer inspection of all factors involved will be apt to show the desirability of moving carefully in the matter. It is, of course, recognized that reclaimed has won for itself a large and definite place which it will always hold. This has always been true since reclaimed passed out of the "shoddy" stage of years ago, but the principal advance of reclaims has come in the last few years, particularly since the price of crude rubber became fancy and erratic.

The improvement of quality of reclaims and of methods of using the various grades has eliminated the necessity of getting away from them as soon as the low price of crude rubber makes it financially feasible to do so. Highly satisfactory products have been produced in many departments of the industry with the use of reclaims. Changes, unless they are imperative, may well prove to be expensive, at least during the period of readjustment.

The present confusion in the crude rubber market should of itself be sufficient to make manufacturers hesitate before abandoning reclaimed rubber. The end of the Stevenson Scheme has been proclaimed and immediately the British and the Dutch are brought together in an attempt to replace it with an unofficial agreement. Should depression in the rubber producing areas be sufficiently severe, it is not at all inconceivable that we should again see some governmental interference in the situation. All of which means that the low price of today may be replaced with something entirely different tomorrow.

With the public clamoring for lower tire prices and competition in the industry continuing as severe as it is, each tire manufacturer is faced with the necessity for economical production. Even though the margin between the price of crude and reclaimed should be greatly narrowed, the advantage of the latter is not to be put aside lightly. The dozens of companies which have learned to use it well will probably not be disposed to take it out of their formulas as hurriedly as some have prophecied.

Rubber as a Career

THE intricacies of business today call for specialization in education as almost a requisite in formulating a career. Law is no longer a successful field for the mere general practitioner nor is medicine. Corporation law, international law, psycho-therapeutics, plastic surgery and obstetrics have all become fields of independent professional effort. So complicated is the structure of commercial life that even as in the professional fields, a sharp differentiation now exists between branches of the same profession. Specialization in specific business fields is now essential.

It is not a far cry from specialization in various industrial efforts to a highly specialized education in rubber culture and manufacture. London, for some time, has offered an educational course in rubber manufacturing through the Holloway Polytechnic school and only recently, through the sponsorship of the Institution of the Rubber Industry, another school has been inaugurated at Manchester, England.

With the new developments in America toward rubber plantation projects on a huge scale as started by the Firestone interests in Liberia and the Ford interests in Brazil, a stimulus to the study of rubber growing has been offered to interested students and has now found fruit in the recent inauguration by the University of Michigan of a course in rubber plantation methods and management. The course is ably conducted by Carl D. Larue and D. M. Matthews, well-known authorities in their professions.

This is the first recognition by an American educational institution of the importance of an instructive course in rubber growing and in the light of recent efforts on the part of American rubber interests to develop American-owned plantations on a really huge scale, the course offers a career for serious-minded youths who are intent on entering this new and potentially great field.

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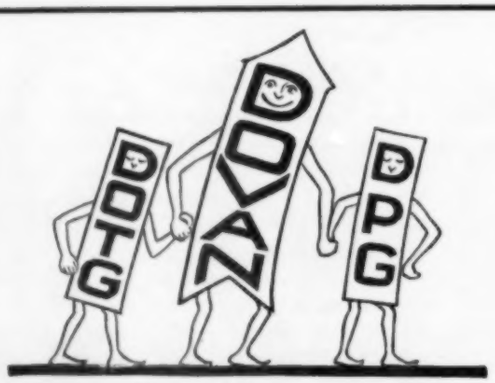

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NEWS of the INDUSTRY

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STOCKHOLDERS VOTE INCREASE IN STOCK

Goodrich Common Stock Issue Is Increased to 1,000,000 Shares of No Par Value—Earnings Over First Quarter 1928 Continue High.

At the annual meeting of the stockholders of the B. F. Goodrich Company, held on April 18, the six directors whose terms of office expired were re-elected.

The stockholders voted to retire 11,880 shares of preferred stock in accordance with charter provisions and authorized an increase of 250,000 shares in the common stock without par value. They also authorized the offer of not to exceed 100,000 shares of the common stock for subscription by certain employees, including officers, under the terms of the employees' stock purchase and profit sharing plan which was approved at the meeting.

Dividend Declared

At the directors' meeting, held immediately following that of the stockholders, all the officers of the company were re-elected. A dividend of $1.00 per share was also declared on the common stock, payable June 1 to stockholders of record May 10. The regular dividend on the preferred stock had already been declared at the January meeting of the directors.

The sales and earnings of B. F. Goodrich Company for the current year are reported to be at approximately the same satisfactory levels as during 1927. January sales and earnings are slightly ahead of the January, 1927, figures, while February showed a slight recession. March figures indicate results approximating those of the same month last year.

Showing is Satisfactory

With prices generally lower this year than last, the maintenance of dollar sales to last year's level would indicate an increase in unit sales. The showing of the company is all the more satisfactory in the face of the sharp decline in crude rubber prices, which has recently tended to deter tire dealers from buying in anticipation of reduced tire prices. With the announcements made by the leading manufacturers, however, that tire prices will not be affected, a new rush of orders is expected with Goodrich coming in for an excellent share of this business.

If the earnings continue throughout the first six months at the same rate as for the first quarter, the common stock now outstanding will have earned approximately $6.50 per share, or 62 per cent more than the total yearly dividend requirements, which now stand at $4.00 per share.

POSTPONE RESTRICTION DEBATE IN COMMONS

The expected debate in the House of Commons on Premier Baldwin's statement concerning the withdrawal of restriction, has been postponed and no definite date for it has been set. Members have been anxious to have the report of the Civil Research Committee made public but in view of the precedents surrounding the Committee, it is doubtful whether the rule of secrecy will be broken. It is understood, however, that a fuller statement will be prepared by Colonial Secretary Amery than has already been made by Mr. Baldwin. It has further become an open secret that the personnel of the Civil Research Committee consisted of Sir Herbert Hambling, a prominent banker, as chairman, Sir Sydney Chapman, the chief economic advisor of the Government, and G. C. Upcott, deputy controller of the supply service of the treasury.

"Yale Day" at Goodrich

The B. F. Goodrich Company recently honored 100 visiting students of the Sheffield Scientific School of Yale University on the occasion of their trip to Akron. Following a breakfast at the Portage Country Club, at which they were welcomed by J. D. Tew, president of the Goodrich Company, they were taken on an inspection trip through the plant for the purpose of studying production methods.

Talks by J. W. Schade, director of research, and Dr. H. C. Howard, manager of Anode research at the Goodrich factory, were made to the students following the inspection of the plant.

The "Ever-Stik" Rubber Company, Inc., is reported to be planning the erection of a factory at Mt. Jewett, Pa. The company is now having its "Ever-Stik" rubber heels manufactured by a company in the east.

The Boston Rubber Shoe Company, Malden, Mass., has resumed operations in its two plants at Malden and Melrose, after a suspension of activities for two weeks, necessitated by alterations and a change over from steam power to electrical installation.

MARCH CONSUMPTION OF CRUDE RUBBER GOES UP

Indicates Manufacturing Industry is Back to High Rate of Production—Arrivals Also Heavy and Stocks on Hand and Afloat Reach Record Peak.

THE consumption of crude rubber during March reached the high figure of 35,688 tons which represented an advance of approximately 2,000 tons over February and indicated that the rubber manufacturing industry had again swung back to a rate of production comparable to the best months in its history. It did not, however, quite come up to the consumption of March, 1927, which was the peak month of last year when a total of 36,141 tons was used. During the first three months of the present year the manufacturing industry has absorbed a total of 103,853 tons as compared with 97,758 tons for the same quarter of 1927.

Imports of crude rubber also increased and totaled 40,894 tons as compared to 35,078 tons in March a year ago and the unusually low figure of 29,445 tons imported in February of the current year. Total imports for the first three months of 1928 now stand at 116,582 tons or approximately 8,000 tons more than during the corresponding period of last year.

In the face of the heavy arrivals and in spite of the increase in consumption the stocks on hand in the United States climbed to 114,061 tons, while the tonnage afloat to the United States was estimated at 39,324 tons, making a grand total of crude rubber on hand and afloat of 153,385, a figure which breaks all previous records.

The consumption of reclaimed rubber during March was estimated at 18,155 tons, representing 50.8 per cent of the total crude rubber used and represents an increase of 2.8 percent from the ratio of reclaimed to crude used in February.

Detailed monthly figures of crude rubber consumption, imports and stocks an hand and afloat are included in appropriate tables in the statistical section of this issue.

The various grades of crude rubber imported during March as compared with the arrivals during the same month of 1927 and February of the current year, as reported by the Rubber Association of America, are shown in the table given below. Official figures will be issued by the Department of Commerce later in the month.

	Mar. 1927	Mar. 1928	Feb. 1928
Plantations	33,114	37,545	27,852
Paras	1,176	2,430	756
Africans	206	72	125
Centrals	253	92	125
Guayule	329	755	587
Manicoba and Matto Grosso	.....	.....	.....
	35,078	40,894	29,445

A Mile-High Testing Track for Tires

THE accompanying illustration shows the new Mile-High tire testing track on the roof of Factory Unit No. 10 of the Gates Rubber Company, Denver, Colo. Actual road conditions are closely duplicated by covering the track with bricks, dirt and other materials which an ordinary tire would encounter on the road and the weight on each tire is made to correspond to service conditions. By such tests one tire is quickly gauged against another. Later, results are checked by road tests under varying conditions of service. The testing track is called the Mile-High track because of the height of Denver above sea-level.

INDIA TIRE & RUBBER CO. ANNOUNCES APPOINTMENTS

Recent changes announced in the executive personnel of the India Tire & Rubber Company by J. M. Alderfer, president, include the appointment of F. L. Ryan, former Pacific Coast manager, as general sales manager and C. T. Morledge as assistant sales manager.

Mr. Ryan, who came with the India organization in 1921, is well known in the industry, having been previously connected with the Diamond Rubber Company and later with Goodrich. He succeeds Clinton C. Prather, who recently resigned to take charge of the new eastern offices of the Samson Tire & Rubber Company of Los Angeles.

The India Tire & Rubber Company is reported to be in an excellent position today as regards its purchases of crude rubber as it has been dealing only in spot deliveries and consequently will suffer no inventory losses due to the recent reduction in crude rubber prices. The company has also announced that there has been an increase of 12½ per cent in sales during the first three months of 1928 over the corresponding quarter of 1927.

GENERAL MOTORS' SALES BREAK ALL PAST RECORDS

Retail sales to consumers by General Motors dealers during March broke all previous records. A total of 183,706 cars of all types were handled as compared with 146,275 cars for the same month last year.

"It is gratifying to be able to call attention to the fact that this constitutes a new record for General Motors," said Alfred P. Sloan, Jr., president of the corporation, in making the announcement. "The best previous record was made in April, 1927, when there were sold to consumers 180,106 cars. In making this comparison it should be recognized that April normally is a larger month than March for retail sales on account of the seasonal trend.

"The following tabulation shows monthly sales of General Motors cars by dealers to ultimate consumers:

	1928	1927	1926
January	107,278	81,010	53,698
February	132,029	102,025	64,971
March	183,706	146,275	106,051
April		180,106	136,643

"These figures include passenger cars and trucks sold in the United States, Dominion of Canada and overseas by the Chevrolet, Pontiac, Oldsmobile, Oakland, Buick, La-Salle and Cadillac manufacturing divisions of General Motors.

"Sales by General Motors to dealers totaled 197,821 cars, as compared with 161,910 for March, 1927, a gain of 35,911 cars, or 22.2 per cent. This also constitutes a new record, exceeding May, 1927, the previous record month, when 173,182 cars were sold to dealers."

Mason Busy With Tire Order

A half-million dollar tire order is keeping the Mason Tire & Rubber Company operating at its peak, according to a recent announcement of W. A. Cluff, president of the company. Branch offices of the company are renewing stocks and preparing for an anticipated heavy summer business. In spite of the large orders received, however, which will keep the plant at capacity for some time, Mr. Cluff stated that it is improbable that the Bedford plant of the company would be put into operation.

Buys Standard Carbon Co.

Godfrey L. Cabot, Inc., have recently purchased the Standard Carbon Company of Pittsburgh, Pa. The Standard Carbon Company was at one time an important producer of carbon black in the Monroe field.

NO CUT IS ANTICIPATED IN PRESENT TIRE PRICES

While no drop in tire prices was expected as a result of the declining market in crude rubber, according to views expressed during the last few weeks by leading manufacturers, the present situation, now precipitated by the British announcement relative to the abolition of restriction, makes the question as to the future price policy of tire manufacturers one of considerable uncertainty.

In the face of the reduction in tire prices made during 1927 aggregating 25 per cent, and with the present prices at lower levels than in previous years, it is not thought probable that further cuts will be made, especially as the new low rubber prices will not begin to be enjoyed by the manufacturers for some time, as it is reported that most of the industry have contracts for rubber stocks purchased before the last market break or large stocks already on hand consequently, and none of the larger rubber companies can afford to reduce prices on their finished products. The consensus of opinion in the industry seems to be, therefore, that tire prices will hardly be cut during the first half of the year.

Since the end of December crude rubber has dropped from around 42 cents to 18 cents or approximately 57 per cent. It is thought that most of the larger rubber companies bought rubber at the December figure of 42 cents and are certainly supplied with from two to four months requirements at prices considerably above the present market. Until crude rubber on hand can be utilized and sold as finished goods, it would seem probable that prices will not be reduced.

One large company which was the instigator of most of the tire price cuts during 1927 and the one producer to whom the industry looks for any sudden price change, is reliably reported to have on hand a large supply of crude rubber which was purchased at a high figure in expectation that Ford would be on greater production basis by this date.

James H. Cronan

With the death of James H. Cronan on April 2, at his home in Akron, the rubber manufacturing industry loses one of its oldest workers in point of service. His record covered 34 years with the B. F. Goodrich Company. Starting as a young man in 1890 in the capacity of timekeeper, Mr. Cronan served his company up to four years ago when he was retired. During his later years with the company he was division superintendent and general foreman. He was also active in Akron city politics and served two terms as councilman. In 1913 he was the Democratic candidate for mayor.

The Federal courts have recently denied the petition of the B. F. Goodrich Company to cancel the mark "Zip-On," used on clothing, on the ground that such mark would be confused with the petitioner's mark "Zipper." Registration has been granted on the marks "Zip Knick," "Zip-Over," and "Zip-Midy," used on articles of clothing.

AKRON RUBBER GROUP A. C. S. PLAN PROGRAM

The Akron Group of the Rubber Division A. C. S., will hold its next meeting on April 26 in the Goodyear General Office dining room at Akron. Dinner will be served at 6:30 P. M. and an interesting program has been prepared for the meeting to be held immediately thereafter.

The general subject before the meeting will be "Factors Affecting Mill Room Operations" with M. W. Pickering, manager of the roll department of the Farrell-Birmingham Company, as the chief speaker of the evening. His particular paper will be on the subject of "Mill and Calender Roll Construction" and will be followed by discussions on power load and power factors; experiences with roll speeds, gear ratios and batch sizes; thirty years' experience in mill room operations and experiences with mills as against internal mixers.

Dr. Winkelman, technical superintendent of the Philadelphia Rubber Works and chairman of the Akron group, will preside at the meeting.

CHEMISTS TO CONVENE AT NEW YORK, SEPTEMBER 3-7

The Society of Chemical Industry will hold its annual meeting in New York City, September 3 to 7. The sessions will be opened at 11:30 A. M. on September 3 and will be followed by an informal luncheon but no technical session will be held on the first day. The chief feature on the program of interest to rubber technologists will be at the September 6 session when the subject for presentation will be "The Electro-deposition of Rubber." Headquarters for the conference will be the Chemists' Club, New York City. A representative delegation of British chemists are coming to the United States to attend the meetings.

Witco Opens Boston Office

Wishnick-Tumpeer, Inc., announce the opening of a Boston office at 141 Milk Street. The office will be in charge of Bert E. Dougherty, formerly purchasing agent for the Republic Rubber Company. This expansion of Witco is in line with the policy recently started by other suppliers of rubber chemicals in establishing Boston branch offices to cover the New England territory.

VOLUME OF TECHNICAL REPRINTS DISTRIBUTED

The first volume of reprints of technical rubber papers to be prepared by the Rubber Division of the American Chemical Society has been completed and distribution has already been made to most technologists in the industry. The volume is known as "Rubber Chemistry and Technology" and contains 20 papers on a wide variety of technical subjects. Practically all of the papers are reprinted from *Industrial and Engineering Chemistry*, the monthly journal of the American Chemical Society. There are, however, three papers from American rubber trade journals, including two from THE RUBBER AGE.

An introduction by the editor, C. C. Davis, explains that the volume is offered as the first of a series and that it is expected to issue a similar one about every three months, the idea being to bring together, for the convenience of the rubber technologist, all of the more important technical rubber papers printed throughout the world. H. L. Fisher is associate editor and W. W. Evans is managing editor.

In addition to the reprinted papers, the volume contains abstracts of many papers for which room could not be found but which were regarded as valuable, and also a review of recent rubber patents. Brief minutes of recent meetings of the Rubber Division and its local groups are given.

Distribution of "Rubber Chemistry and Technology" is to the members and associate members of the Rubber Division. Copies of the first volume have also been distributed by the Rubber Association to its member companies. The Association has financed the greater part of the undertaking, which is acknowledged by the Division in the first volume.

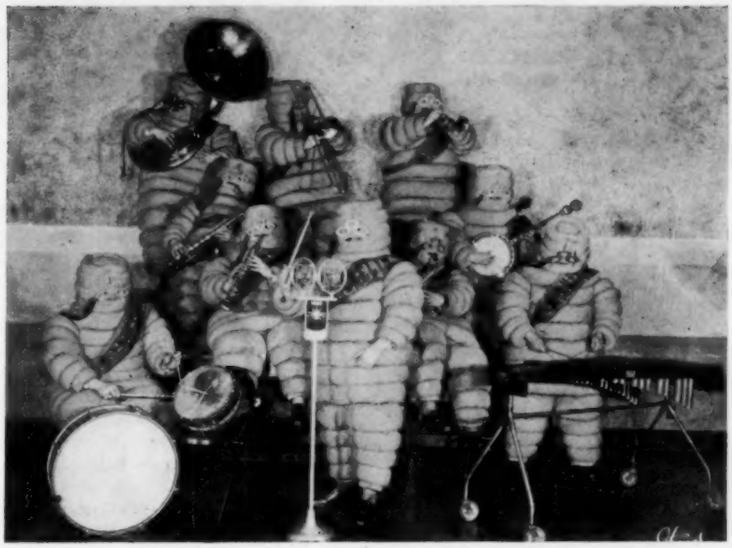
Exchange Seat at $13,000

A new high record price for a seat on the Rubber Exchange of New York was established April 18 when Charles T. Wilson purchased "for the account of another" the extra membership of Robert L. Baird for $13,000. This represents an increase of $1,000 over the last seat sold. Both Mr. Wilson and Mr. Baird are members of the Board of Governors of the Exchange.

Reference Service Ready

The first technical references on rubber prepared by Smith & Smith of Akron, were due to be distributed on April 20, according to Dr. Julian F. Smith. Six classes of rubber technology are covered.

The Michelin Tiremen Orchestra



Broadcasting the radio programs of the Michelin Tire Company every Thursday evening over WJZ and associated stations

LOS ANGELES GROUP, A.C.S., WILL HOLD 2ND MEETING

The second meeting of the Los Angeles Group of the Rubber Division, American Chemical Society, will be held Friday evening, May 11th, at the Mary Louise Restaurant, 2200 West Seventh Street, Los Angeles, preceded by dinner at 6:30 P. M. The feature of the evening will be a round table discussion of calendering with J. P. McIntire of Goodyear presiding. Short talks on stock handling by Arthur Kelly of Goodrich, and mechanical features by L. A. Whitcomb of Goodyear will also be made.

At this meeting the new constitution and by-laws prepared by the executive committee will be submitted for approval and officers for the ensuing year will be elected.

The Valley Rubber Company, a newly organized corporation, capitalized at $100,000, and located at Wheeling, W. Va., recently held an organization meeting of its board of directors and formulated plans for expanding operations. The company manufactures rubber packing and rubber balls. Plans for the erection of a new factory are under way. Their present location is at 1113 Chapline Street, Wheeling.

The Inland Rubber Company, Chicago, Ill., recently announced through its vice-president and Pacific coast representative, C. P. Turner, that twenty-five tire stores would be opened by the company within the current year in southern California and that the plans of the company to build up further lines of chain stores was in accord with the future policy of the company to retail its own brand of tires direct to consumers.

The Good Rubber Company is building an addition to their plant at Kenmore, Ohio. Specifications call for a small two-story addition of frame construction.

U. S. RUBBER ELECTS THREE NEW DIRECTORS

Expected Dissatisfaction Over Company's Financial Position Not Manifested at Annual Meeting—Preferred Dividend Suspended.

THE annual meeting of the stockholders of the United States Rubber Company, held at New Brunswick, N. J., April 17, was without incident except for the election of three new members to the board of directors. In view of the continued losses of the company and criticism on the part of certain stockholders, it was expected that some changes in the management would be asked, and it was particularly rumored that in view of their large personal holdings the duPont family would seek representation on the board of directors. At a previous meeting of the directors on April 6, the preferred dividend of $2.00 per share had been passed and a net loss of approximately $600,000 was reported for the first quarter of the current year.

Three New Directors Elected

The new directors elected at the stockholders' meeting include W. O. Cutter, vice-president and controller of the company; P. W. Dixon, a resident of New Brunswick, N. J., and a large stockholder, and George Deshler, also a large share holder and former director, who again returns to the board. None of the new directors have any known connection with the duPont interests. Announcement was made, however, at the meeting that the holdings of the duPont family totaled only 10,269 shares of common out of 810,000 shares outstanding and 1,800 shares of preferred. The duPont holdings were divided as follows: Irenee duPont held 10,000 shares of U. S. Rubber common stock and 1,000 shares of preferred on March 28; Constance S. duPont held 100 shares of common; Mary B. duPont, 169 shares of common; A. Felix duPont, 500 shares of preferred, and Bertha T. duPont, 300 shares of preferred.

Charles B. Seger, chairman of the board and president of the company, presided at the meeting. Proxies representing 520,419 shares were voted.

Analysis of Earnings

Recent analyses of the company's affairs made by Dow, Jones & Co. indicate that the net loss of $600,000 from the company's own operations for the first quarter of the current year will be overbalanced by the estimated profit from the United States Rubber Plantations Company of approximately $1,000,000 for the same quarter, leaving consolidated net earnings of approximately $400,000, or less than one-third of the period's dividend requirements on the preferred stock.

In a letter to the stockholders from C. B. Seger, president of the company, explaining the action of the directors in suspending the preferred dividend, it was stated that such suspension was necessary to comply with the terms of an indenture covering the company's 6½ per cent gold notes issued March 1, 1925, which provides that no dividend can be paid on any class of stock unless, after the payment of such dividends, current assets shall be equal to at least twice current liabilities, plus the total amount of the 6½ notes outstanding. The indenture further provides that in computing the value of current assets, inventories shall be figured at cost or market prices, according to which ever is lower. With the present decline in crude rubber the present inventory value f the company's rubber stocks has consequently suffered considerably. In further explanation of the company's position, Mr. Seger in his letter to the stockholders said:

"The drastic decline in the market price of crude rubber since December 31, 1927, does not necessarily mean a corresponding loss to the company, inasmuch as the actual value of the rubber and the ultimate results depend upon the prices at which finished products manufactured from this rubber are sold. Except for the limitations imposed by the indenture, there is no reason why the regular quarterly dividend on the preferred stock should not have been declared at this time.

"If, as is hoped, the present situation in connection with the indenture can be corrected during the year and the dividend is earned, there is no reason why it should not be declared later during or for the year 1928."

Scale Aids Roll Flap Sales

A feature of the new roll flap marketed by the Gates Rubber Company, of Denver, Colo., is the measuring scale which comes in each 50 foot or 100 foot length. The

scale is printed on tough paper stock designed to be pasted along the edge of a bench or counter, or on to a strip of wood of the required length.

All tire sizes are listed in standardized order, according to rim diameter and cross section. The dealer lays his measuring rod along side the flap and gets the correct length for any tire size merely by cutting at the point shown on the chart. The correct place to punch the hole for the valve stem is also clearly indicated.

Goodyear Suit Postponed

Hearings in the $16,000,000 suit brought by certain stockholders agianst the Goodyear Tire & Rubber Company several months ago in the Cleveland courts and scheduled for April 17, has been postponed to May 7.

The suit is in connection with the refinancing plan adopted last year by the company under which stockholders were asked to accept one and a quarter shares of new stock for each share of old stock in lieu of cash dividends which had been due on the stock for the period from 1920 to 1925.

RUBBER COMPANIES HAVE EXHIBITS AT AERO SHOW

Both the Goodyear Tire & Rubber Company and B. F. Goodrich Company exhibited at the recent All-American Aeronautical Exposition which closed April 21 at Detroit. The exposition was the largest held in aeronautical circles with practically every airplane and accessory manufacturer represented.

The Goodrich exhibit, in charge of Henry Wacker, manager of aeronautical sales, showed the largest aeroplane tire ever made in the United States, measuring 64 by 14 inches together with a wide range of tires, tubes and accessories used in planes. The Goodyear company section was in charge of Larry Guinther, assisted by Karl Wollam, the well-known Goodyear balloon pilot. The exhibit included a replica of the 6,500,000 cubic foot ship designed for the navy and the racing balloon basket which has been the winner in five national balloon races and two international contests.

Hose Specifications

The Rubber Association of America, Inc., has recently published the results of a survey of specifications being used by United States railroads in purchasing various classes of hose, the Association having worked for standardization in this regard for many years. The compilations reveal that in some classes of hose as many as 22 out of 30 railroad companies are purchasing according to the "Recommended Practice" specifications of the American Railway Association which have the approval of the Rubber Association. In other classes almost half of the buying is still being done on the manufacturers' brands.

The Rubber Corporation of America, which is completing a factory in Muscle Shoals City, Ala., for the manufacture of rubber floor tiling, expects to be in operation by May 1 of this year. J. E. Buckley, who has had a wide experience in the rubber industry with the Republic Rubber Company and the Brunswick-Balke-Collender Company, has arrived in Muscle Shoals City to take charge of plant operations. It is stated that the company already has orders in hand to be filled as soon as the production can be started.

The Goodyear Tyre and Rubber Company (Great Britain), Ltd., have announced that they have moved their head offices from 15 Lots Road, Chelsea, London, to the new factory premises at Wolverhampton. The old location will continue to be occupied as the London branch. The branches at Manchester, Glasgow, Belfast and Dublin will continue to operate as heretofore and arrangements are being made to open new distributing depots at various other centers.

CATALPO!

Names in the News

J. A. ROBERTSON has been appointed assistant advertising manager of the Goodyear Tire & Rubber Company, according to an announcement by C. T. HUTCHINS, advertising manager. Mr. Robertson joins the Goodyear organization after 15 years of successful selling and advertising experience, having been at various times with Lit Brothers, Philadelphia; Gimbel Brothers, New York; Wilson & Company, Chicago,

J. A. ROBERTSON

and N. K. Fairbanks Company of Chicago. During the past two years he has operated his own advertising agency in Chicago.

D. B. O'N'EALL, who has been with the advertising department of the Goodyear organization since 1925, has been selected to work directly with Mr. Hutchins and Mr. Robertson, and will supervise the planning, preparation and promotion of all forms of dealer advertising.

CLINTON C. PRATHER recently resigned from the India Tire & Rubber Company to accept the office of manager of the eastern branch of the Samson Tire & Rubber Company of Los Angeles. A. C. FISHER, former advertising manager of the India organization, will be Mr. Prather's assistant.

A. L. PIATT, formerly branch manager of B. F. Goodrich Company at Dallas, Texas, has resigned to engage in the retail business in Fort Worth. He has been succeeded by J. E. WACKSMUTH.

KARL W. VAN NIX, crude rubber broker, is now associated with the Holcombe Rubber Company, Inc., 17 Battery Place, New York City.

ALBERT V. W. TALLMAN, crude rubber broker, has moved from 25 Beaver Street to 77 Broad Street, New York City.

W. J. GALLAGHER, formerly managing director of the United States Rubber Plantations and Malayan American Plantations, Ltd., has been elected a member of the Rubber Growers' Association Council of England.

MAJOR E. E. LOMBARD, French assistant military attache at Washington, D. C., was a recent guest of the officials of the Goodyear Tire & Rubber Company, at Akron. After a brief inspection of the plant and luncheon, he was taken for a ride in the blimp "Pilgrim."

C. H. ROATH, of the aeronautical department of Goodyear Tire & Rubber Company, spoke recently before the Lindbergh club of the Akron Y. M. C. A.

M. W. CONANT celebrated his first anniversary as head of publicity of the Miller Rubber Company on April 4. Mr. Conant came to the Miller organization after sixteen years of service in the newspaper game in Florida.

H. A. PRICE has been appointed to head the Los Angeles branch of the Miller Rubber Company, having recently resigned as an executive of the Pacific coast division of the Goodyear Tire & Rubber Company after 11 years of service with that company.

G. T. ROBERTS of the Firestone Tire & Rubber Company, Akron, spoke recently before the Kiwanis Club of Elyria, O., on the subject of rubber and the Firestone developments in Liberia.

W. O. RUTHERFORD, former vice-president of the B. F. Goodrich Company, has returned from an extended trip to the West Indies and the Central American countries bordering on the Caribbean. He spent a considerable part of the time in Cuba where he revisited the scenes of his campaigning days when he was a member of the 8th Ohio Volunteers during the Spanish-American War.

H. L. MCLAREN, president of Ajax Rubber Company, is spending a brief vacation on a trip to the West Indies and expects to return late this month.

EDWARD O'NEIL, formerly service manager of the Converse Tire and Rubber Company, and WILLIAM GERRARD, until recently foreman of the tube department of the same company, have opened a tire store in Malden, Mass., where they will handle Dunlop tires and tubes and maintain a tire repair department.

JOHN S. ALLARD, sales manager of the New York branch of the Converse Rubber Shoe Company, has resigned to join the footwear sales division of the B. F. Goodrich Company. GEORGE W. BARR, his assistant, succeeds him at the New York Branch of the Converse company. Mr. Allard joined Converse in January, 1925, after four years of sales experience with the Anderson Manufacturing Company and the Sportoccassin Company. He has represented Converse on the rubber footwear division of the Rubber Association for several years.

W. W. WARR of the Manhattan Rubber Mfg. Company has been named as a member of the merchandising advisory committee of the Power Transmission Association. F. L. CURTIS of the same company is a vice-president of the Association.

H. J. SPALDING has been recently appointed manager of repair materials and accessories sales for the Mohawk Rubber

H. J. SPALDING

Company. He was previously manager for his company at the Kansas City branch and was brought back to Akron last fall where he was placed in the department which he now heads.

C. C. DAILY of the C. P. Hall Company, Akron, recently returned from a selling trip through the middle west and Chicago territories, where he visited the rubber trade.

E. H. GRAFTON of the Murray Rubber Company was elected chairman of the Specifications Committee, Mechanical Goods Division, Rubber Association of America, at the annual meeting held in New York City on April 11. J. M. CRANZ of the Hewitt Rubber Company was elected vice-chairman.

C. M. PIPER of the Goodyear Tire & Rubber Company was elected chairman of the Rubber Flooring Division of the Rubber Association at the annual meeting of the Division on April 5. J. H. STEDMAN is the new vice-chairman. Others on the executive committee of the Division, in addition to the above-named officers, are J. H. WALTERS, United States Rubber Company; AUGUSTINE DAVIS, American Rubber Products Company; and W. BROWN, JR., of the Hood Rubber Products Company.

J. W. FERGUSON and C. J. POMEROY, of the International B. F. Goodrich Company, recently sailed for South America where they will represent their company. Mr. Ferguson's headquarters will be in Buenos Aires while Mr. Pomeroy will be located at Rio de Janeiro.

Timely Financial News

DUNLOP, LTD., SHOWS INCREASED EARNINGS

Net Profits Before Dividends for 1927 Total £1,992,532, Representing a Gain Over 1926—But Deductions for Dividends Leaves Deficit.

THE anual report of the Dunlop Rubber Company, Ltd., the leading rubber manufacturer of Great Britain, for the year ended December 31, 1927, shows a net profit of £1,992,532 after depreciation, interest, general reserve and preferred dividends of subsidiaries, as compared with £1,804,302 in 1926. After deducting £375,000 for preference dividends, the balance remaining for common dividends on the 20,452,235 shares of common stock outstanding was £1,617,532. The deficit, however, after payment of common dividends was £86,876 as compared with a surplus the preceding year of £72,366.

The report of the company indicates that business at home and abroad was satisfactory and increasing in volume but commented on the severe competition in the face of low prices. Extensions in the Fort Dunlop Works are in course of construction and the capacity of the tire fabric plant at Rochdale, England, has been increased. Reorganization of the Macintoch group of factories reported practically completed.

The company's rubber plantations are reported in a highly satisfactory condition, although costs were higher during the year due to the operation of restriction. Reserve rubber lands have been opened up and are being rapidly planted.

LEE RUBBER COMPANY SHOWS GAIN IN SALES

The Lee Rubber & Tire Company is reported to have done a business during March in excess of $1,000,000 with prospects for April at even a better figure. The Republic Rubber Company, Lee's subsidiary in the manufacture of mechanical goods and which accounts for approximately 25 per cent of the total sales, is also reported to have done a record business since the first of the current year.

The first half of the company's fiscal year will end April 30 and according to a financial survey of the company by Dow, Jones & Company, the earnings for the first five months and the reserves set up for contingencies are sufficient to cover all adjustments, should it be necessary to write finished and unfinished inventories down to to the present market values. The company is said to be particularly fortunate in its inventory position with very little crude rubber on hand at high purchase prices and the company can now take advantage of the present low market to replenish stocks.

The question of the institution of a dividend on the company's stock will come up for discussion at the director's meeting on May 24 and while the financial position of the concern is believed to warrant favorable action in the matter, the uncertainty still prevailing in the crude rubber market may prompt the directors to continue to apply earnings to the contingent reserve for the time being.

RUBBER COMPANY STOCKS STEADY IN QUIET MARKET

Prices of stocks of the various rubber manufacturers have been steady during the past fortnight and the markets have been relatively quiet. Good reports covering operations for the first quarter of the year coming from most of the rubber companies have given the market for rubber stocks a healthy firmness and fluctuations in quotations have been slight. Goodyear suffered a slight relapse and touched 50⅛ for a new low for the year but has recovered to 53½. United States Rubber also established a new low record of 77¼, but has returned to 80. The crude rubber market has no doubt been a contributing influence in the decline in Intercontinental Rubber, but it is still above its low for the year. The same influence has probably been the cause for U. S. Reclaiming to touch 12.

The feature of the market has been the phenomenal rise in Mohawk common which has climbed in the last fortnight from 53½ to 125. The activity in the stock is attributable to a report of earnings of $23 per share on the common stock and the favorable refinancing plan recently adopted by the board of directors which included the underwriting of $800,000 of debentures by the Union Trust Company of Chicago. Most of the buying interest in Mohawk stock is said to be coming from Chicago.

Late Stock Prices

	Last Price		—1928—	
	Apr. 18	Apr. 3	High	Low
Ajax	10⅞	11⅝	14⅜	9⅜
Firestone	181	185	232	170
do. 6% pfd.	110	112	112	109
do. 7% pfd.	109½	109	111½	108
Fisk	15¾	16⅛	17¾	14¾
do. 1st pfd.	82¾	87½	98	82
General	165	166	190	165
do. pfd.	101	101½	111	100
Goodrich	86¼	85	99⅜	80
do. pfd.	114½	115	115	109½
Goodyear Com.	53½	56⅝	72½	50⅛
do. pr. pfd.	96	95⅞	99½	96
do. pfd.	100	—	120	100
Hood	—	37	43	42
India	22½	20	23½	16
Intercontinental	12⅞	16¼	21¾	11¾
Kelly Springfield	22⅝	24⅝	27⅜	15
do. 1st pfd.	—	74	78	75
do. 8% pfd.	—	—	84	55¼
Lee	18⅞	19¾	22⅝	17¼
Miller	22	24⅜	27½	21
do. pfd.	86	93	97½	90
Mohawk	125	53½	125	29¾
do. pfd.	83	73	85	55
Seiberling	39	41	42½	35
do. pfd.	105	103	105	102
U. S. Rubber	45¾	51⅛	63¼	40
do. pfd.	80	92¾	109⅜	77¼
U. S. Rubber Reclaiming Com.	—	—	16½	12

BRITISH ARE URGED TO KEEP RUBBER SHARES

London financial experts are unanimous in advising investors not to sell their rubber plantation shares as a result of the drop in prices following the Baldwin announcement. Cheaper rubber means increased sales. Consumption is on the increase and a recovery in the price of both the commodity and the shares is optimistically looked for.

The best-informed opponents of restriction say that stockholders in British companies have every reason to be grateful to the Government and the Civil Research Committee for terminating restriction. All the disadvantages of restriction have fallen exclusively upon British companies and—to a lesser extent—upon British companies in foreign territory which voluntarily submitted themselves to a degree of restriction but milder than the compulsory variety. All the advantages of the scheme were secured by the growers in the Dutch East Indies and other non-restricting areas which, of course, suffered none of the disabilities of restriction. The vast growth of their industry is a measure of the advantage they gained from it.

It is pointed out that under the plan the British sold less rubber than they could produce, received the same price as their competitors, but as their costs were higher by several pence per pound their margin of profit was smaller. On the other hand, the Dutch and other foreign producers sold greatly increased quantities of rubber, their costs were correspondingly lower, and their margins of profit wider. In the meantime, the rest which British estates gained through restriction has greatly improved their condition and reduced the incidence of disease among the rubber trees.

Rex Company To Be Sold

The property of the Rex Tire & Rubber Company, Wadsworth, Ohio, will be sold to the highest bidder on May 1, by order of the common pleas court of Medina, O. An approval of the appraisal of the property at $103,981.63 was also made by the court.

Receiver Arthur Van Epp was empowered to advertise and conduct the sale, set for 1 o'clock, May 1, and to accept the highest bid offered for the property, provided no bid under $40,000 be accepted.

The company, which has borne several names, was thrown into receivership some weeks ago as part of a move to reorganize and put new capital into the enterprise, which was burdened by a number of judgments against it.

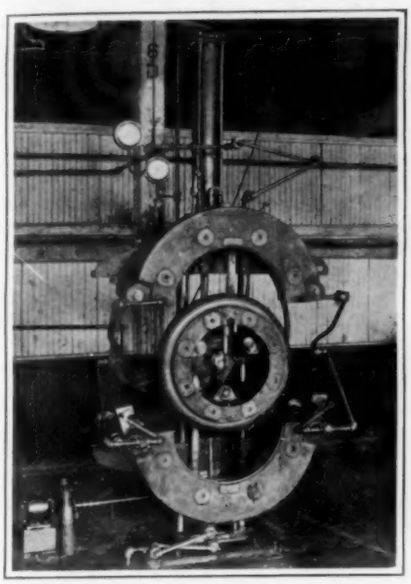
CATALPO!

New Equipment for Rubber Factories

Williams Molded Tube Vulcanizer

THE accompanying illustration shows the Williams Automatic mold for inner tubes which is now being offered to the trade by the Williams Foundry & Machine Company, Akron, Ohio.

The manufacturers state that this unit



Williams Tube Mold

was withheld from the market until the original installation of about a dozen units was thoroughly proven out in practice by one of the larger tire companies and pronounced practical and satisfactory.

The equipment is said to be entirely automatic. After placing the tube on center, a push button control starts inflation and mold closing simultaneously. After the cure is completed, the length of which can be set for any pre-determined period, the mold automatically opens for removal of tube. Various lengths of cures can be obtained by a simple adjustment.

The manufacturers also claim that this equipment produces more tubes per operator than any other tube vulcanizer and that perfect tubes are the result. Any desired inflation pressure can be used.

Machinery Companies Merge

The Buffalo Foundry & Machine Company, Buffalo, N. Y., have announced that they have acquired the assets, physical properties and patents of the Chemical & Vacuum Machinery Company, also of Buffalo. The "Buflovak" and "Buflokast" lines of dryers and evaporators will be supplemented with several new types. These include the spray film feed and a new design of vacuum rotary dryer.

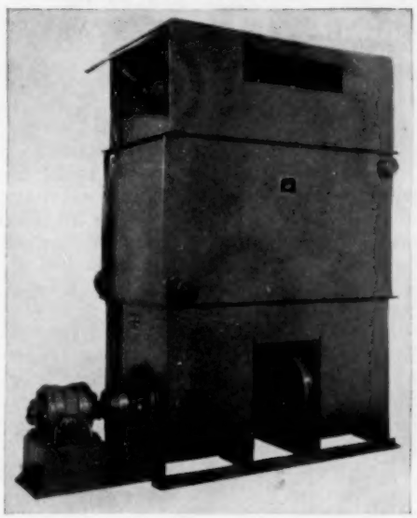
Charles O. Lavett, former general manager, and H. E. Neubauer, former chief engineer of the Chemical & Vacuum Machinery Company, are now associated with the Buffalo Foundry & Machine Company.

Unit Heater for Rubber Factories

A NEW floor-type, high-pressure unit heater has recently been introduced by the Buffalo Forge Company, Buffalo, N. Y. The manufacturers claim several improvements in this type heater which make it particularly adaptable for use in rubber factories, principally because it can be used with high pressure steam up to 200 pounds or more, permitting each unit to deliver a greater amount of heat. The two sets of conoidal fans deliver the heated air at comparatively high velocity. Being unusually narrow, these units may be installed alongside columns or at aisle intersections, without projecting far into the room.

These Type "AA" Heaters, as they are designated, are made in three sections. The lower part consists of a pair of conoidal fans on a single shaft, driven by motor or pulley. Above the fans are the heating coils, assembled in staggered rows between two extra heavy steel headers, which project through the sides of the coil casing. One end of each header is flanged for connection to supply or to return steam lines.

Type "AA" Heaters are made in five sizes. The manufacturers claim that this type of heater possesses an advantage over the overhead type especially when ceilings are unusually high, as they insure circulation of warm air near the floor line regardless of the height of the room and at the same

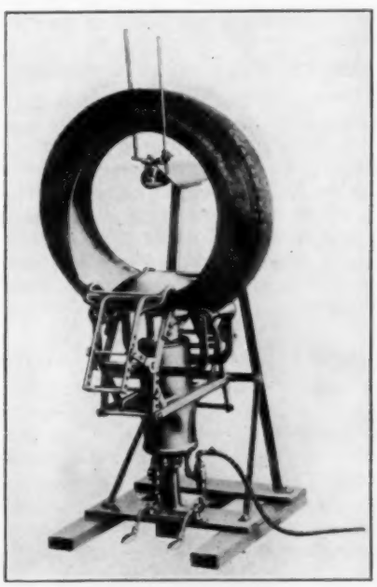


Buffalo Forge Unit Heater

time the air is delivered at a sufficient distance above the working zone to prevent objectionable drafts. Another advantage claimed is that in using steam at high pressure the cost per B. T. U. is reduced as well as enabling each heater to serve a larger area.

Heavy-Duty Tire Inspector

THE Manley Manufacturing Company, York, Pa., is offering to the trade a portable heavy-duty pneumatic tire inspection machine which operates from the



Manley Tire Inspector

usual garage tire inflation system and is claimed to be of the simplest type of its kind to operate. The machine handles any size of pneumatic tires and the operation is merely by pressing a foot pedal to spread and another pedal to release. The tire is held firmly in place by a vertical rod adjusted by a thumb screw, leaving the hands free to handle the tire. By an arrangement of toggle and roller cam action a correct action of the hooks is obtained, which spreads the tire easily and without danger of damaging the internal structure of the tire. The length of the hooks is easily adjusted according to the size of the tire by means of slip-pins.

The machine is mounted on a wooden portable base and can be easily moved about. It is designed for both inspection and repair work.

Bead Taping Machine

The Banner Machine Company, of Columbiana, O., has recently brought out a new type of bead taping machine with several automatic features. The hand operation of the machine consists merely of placing the bead into the shuttle of the machine, the taping operation being automatic. The taped bead is also automatically discharged, and is caught on a hook on the pedestal of the machine. These automatic features permit of the taping to be combined with the bead winding operation. The manufacturers claim that with the machine, beads may be taped at the rate of 20 beads per minute.

Rubber News Around the World

ORMSBY-GORE VISITING MALAYAN RUBBER AREAS

Colonial Under-Secretary Ormsby-Gore, who is on an official tour of the British rubber-producing countries, has already traversed some 200 miles of country in Malaya, principally rubber and paddy districts. He has inspected the rubber estates of South Kedah and inspected the irrigation area of 50,000 acres located in the largest rice-growing area of Malaya. He still has a heavy list of engagements to fulfill before his tour is completed.

In an interview at Taiping, Mr. Ormsby-Gore said he would probably make a statement on the rubber situation at Kuala Lumpur, though he would prefer to delay doing so until he had visited the Dutch East Indies.

Referring to the anxiety created by the announcement of the forthcoming abolition of restriction, he expressed the opinion that in the coming economic struggle British producers would find their longer experience a great asset, especially in management, labor and cultivation generally, but the scientific progress of the Dutch is an important factor in the problem. Mr. Ormsby-Gore does not take a gloomy view of the future of the industry. Rubber, he thinks, will be put to widely extended uses if the price remains reasonably low, and the eventual survivors of the struggle will be those with the lowest overhead charges coupled with the greatest yield per acre. Mr. Ormsby-Gore is greatly interested in scientific work in Malaya, because it is undesirable that any country should become too dependent on one crop, and it is important to develop so far as possible, diversity of agricultural effort in tropical areas.

Speaking of the removal of restriction in November, he referred to the difficulty in which the British Government was placed by the unwillingness of Ceylon to take part in any extension of the scheme.

Canadian Rubber Industry

During 1927 the rubber manufacturing industry of Canada climbed from the tenth place among the Dominion's industries to eighth, according to a report of the secretary of the Rubber Association of Canada. The industry during the past year enjoyed heavier production and larger sales in both the domestic and export markets than ever before. The value of the annual output in rubber goods approximated $100,000,000.

GREECE IMPROVES AS AN AMERICAN TIRE MARKET

Automobile tire imports of all kinds into Greece have increased in value, according to a report of the Department of Commerce, from approximately $439,123 in 1924 to $577,213 in 1925 but declined to $466,156 in 1926, the latest year for which official statistics are available. It is stated, however, that the 1927 tire imports probably increased over all other years.

All sizes and styles of tires are sold in the Greek market. Straight side casings are in greatest demand. Over 25 different makes of tires are already in the field and competition is very keen. Price is an important factor in determining the volume of sales. On account of the existing competition, distributors and dealers are granting long terms to consumers. The most important makes of tires offered are nine American and seven European brands.

ROME TO HOLD WORLD AUTOMOBILE CONGRESS

The World Automobile Congress, organized by the Unione Italiana Fabriche Automobili together with the Royal Automobile Club of Italy, will be held at Rome, September 25-29. A tentative program has already been announced. Delegates will include representatives of foreign governments, the League of Nations, chambers of commerce, foreign trade bodies, automobile and touring clubs of the world, members of the Bureau Permanent of the Societies of Motor Manufacturers, automobile and trade associations and representatives of railways, bus-lines, etc.

The official languages of the congress will be Italian, English and French. All reports and communications, including papers to be read at the congress, are to be in the hands of the president of the executive committee, Count Romeo Gallenga Stuart, not later than June 1, 1928, in order that they may be translated and made ready for distribution. Several Americans are planning to attend.

Australian Merger Rumored

A recent dispatch from London carries the rumor that the Dunlop Rubber Company (Australasia), Ltd., Sydney, Australia, is proposing to merge its interests with the Perdriau Rubber Company, also of Sydney. The merge would involve a combined paid up capitalization of £3,500,000. A holding company may be organized with a capital of £6,000,000 to acquire the shares of the two companies.

Lloyd's Has Rubber Flooring

A feature of the new palatial building of Lloyd's, in Leadenhall Street, London, which was recently opened by the King, is the rubber tile flooring in the underwriters' room. The entire area of approximately 2,000 square yards is laid in ⅛-inch rubber tiling manufactured by the Leyland and Birmingham Rubber Company, Ltd.

Issues Uniform Price List

The four leading rubber manufacturing companies in Australia—Dunlop, Perdriau, Barnet Glass and Goodyear, have issued a uniform tire price list to the trade throughout Australia, New Zealand and Tasmania.

CUBA CONTINUES AS AN IMPORTANT TIRE MARKET

While the United States exports of automobile tires and tire repair materials to Cuba increased by less than one per cent last year over the trade in 1926, the total value of such business has reached the appreciable figure of $1,878,947. Exports of casings increased in volume by 18 per cent.

The United States' position in the Cuban market remains dominant, the nearest competitor being the United Kingdom. According to the Automotive Division of the Bureau of Foreign and Domestic Commerce, registrations of motor vehicles in Cuba total 42,007. The annual consumption in Cuba is estimated at 5 tires per automobile. At this rate the total consumption for 1928 can be estimated at approximately 210,000.

A total of 135,469 automobile casings were shipped from the United States to Cuba during 1927 and 101,810 inner tubes. The unit value per casing was $9.75 while the inner tubes were invoiced at $1.62 per tube. Solid tires to the number of 10,299 also found their way to this market and tire repair materials to the value of $50,353 were shipped.

BRITISH INDIA TYRE CO. TO START FACTORY SOON

At a meeting of the recently formed India Tyre and Rubber Company (Great Britain), Ltd., held the middle of March at Glasgow, satisfactory progress was reported on the remodeling and equipment of the new factory at Inchinnan, Scotland. All equipment contracts are reported to have been placed for delivery by April 30 and the factory should be in operation soon thereafter. Mr. Worth, works superintendent, has already arrived from the United States along with sufficient key men for each department to begin production without a hitch. W. P. Naismith, chairman of the board, presided at the meeting.

FIRST BRITISH GOODYEAR TIRE NOW ON EXHIBITION

The first tire to be turned out at the Goodyear plant at Wolverhampton, England, December 15, 1927, has now been brought back to Akron by C. C. Slusser, vice-president and factory manager of the Akron plant, and placed on exhibition. A number of the men formerly in the Akron factory and who were transferred to the British plant, wrote their names on the tire before it left for Akron.

CATALPO!

Rubber Goods and Specialties

Rubber Sink Stopper

The Schacht Rubber Manufacturing Company, Huntington, Indiana, is offering to the hardware accessory trade a new sink stopper made of non-blooming red rubber with a flexible center and heavy non-curling rim. The flexibility of the center allows for the force of suction which helps to prevent leakage while the heavy non-curling rim holds the stopper securely in place. The center

piece is supplied with a ring for convenience in placing and withdrawing the stopper from the pipe vent.

Rubber Decoy Duck

The inflatable rubber decoy duck which is being produced by the Miller Rubber Company, Akron, and which was mentioned in the last issue of THE RUBBER AGE, is shown in the accompanying illustration. The ease of transporting a number of the rubber

decoys, as compared to the bulky wooden ones, is apparent and is expected to make the new decoys popular with hunters. Both duck and drake decoys are available. They are inflated through a stem in the bottom. Three weights fastened to the bottom of the decoy keep it upright in the water.

Dolls' Overshoes

Dolls will now be able to wear overshoes in inclement weather, according to Fred K. Braitling, of Bridgeport, Conn., who has developed a complete line of dolls' self-locking overshoes. They are made of rubberized material in five doll sizes and in various prevailing colors.

Bathroom Ensembles

One of the leading department stores in New York City is offering a new bathroom ensemble consisting of a rubber bath mat, rubber mat for the inside of the tub and rubber lined chintz bath curtains in green, blue, yellow or rose. The three-piece sets retail for $15.85. Color is becoming increasingly popular in bathroom fittings such as soap dishes, tumbler holders, toilet seats as well as shower curtains, bath mats and window shades.

New "Web-Grip" Sole

The "Web-Grip" sole for sport shoes is the latest development of the Alfred Hale Rubber Company, Atlantic, Mass., which is well-known for its line of Rajah crepe rubber soles for sport footwear. The wearing surfaces of the Web-Grip soles are made of webbing impregnated with rubber. During the process of vulcanization the surface of the sole is molded into a distinct design as shown in the accompanying photograph. This design has been selected to give the maximum traction for the wearer, regardless of the surface on which he may be walking. Left and right heels are provided to further insure the holding qualities. The combination of webbing and rubber is claimed to give unusually long wear.

Essex Wearite Soles

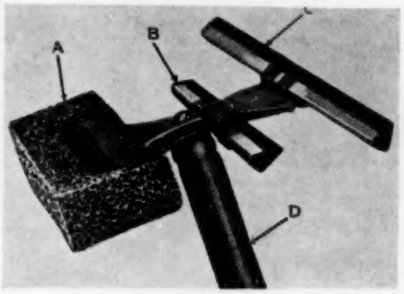
Sales of their Wearite rubber composition soles have now reached close to 4,000,000 pairs a year, the Essex Rubber Company of Trenton, N. J., has announced. More than 10,000,000 pairs have been sold within the last three years.

Acid-Proof Apron

An all-rubber apron is one of the latest products of the Gates Rubber Company of Denver, Colo. Marketed through regular jobber channels, this apron is finding much favor among battery men as well as on the car-washer rack. It is fully acid-proof as well as water-proof, and being all-rubber it is not subject to destructive attack as a rubberized fabric apron is as soon as the rubber coating wears through.

Unique Window Washer

A unique window washer is one of the latest products put out by the Kristee Manufacturing Company, Akron, O., and combines a washer, cleaner, dryer and polisher in one. In the accompanying illustration the arrow "A" shows the sponge rubber washer, made of pure gum rubber, held firmly by a metal clamp. Arrows "B" and "C" point to the drying rubbers, the short one for



small windows and the long one for large windows. The drying rubbers are held in place by clamps which permit the rubbers to be changed quickly. The manufacturers claim that the device is equally applicable to mirrors, automobile windows and windshields and gets up into the edges and corners. For use in washing high windows, socket "D" is provided so that the device can be fitted on a pole.

Headrest for the Bather

A soft, padded headrest for the comfort of those who like to bathe leisurely has

been introduced by Carl Ott of Bad Homburg, Germany. The pillow section, which is covered with a rubberized, waterproof material, is provided with two straps at the ends of which are pneumatic rubber buttons. By the force of suction against the surface of the bathtub, these buttons hold the headrest in the desired position. The device can, of course, be transferred for use in any other place where a smooth surface is offered so that the suction buttons can function effectively.

General Tire Sales Gain

The General Tire & Rubber Company reports an increase of 28 per cent and 40 per cent in sales and tire production respectively for the first quarter of the current year. According to company officials, the prospects for the first six months are especially encouraging from the volume of orders now on hand and production at the present rate will be the rule for the spring and most of the summer.

Current Crude Rubber Items

RUBBER DECLINES AGAIN IN EXCHANGE TRADING

Price Levels Drop Further Since the Sharp Break in Market Following the British Government Announcement on Restriction—April Reaches 16.60.

TRADING on the New York Rubber Exchange during the last fortnight has been active, but largely of a speculative nature. The reaction from the British Government announcement on restriction has produced an unsettled tone, but there are signs of the market settling down to near present levels. The fluctuations over the fortnight have been comparatively light, with only one sharp decline of 150 points between any two trading days. April position fell from the high point of 20.50 to 16.60 as a new low during the fortnight, but recovered to 17.20 on April 19.

There has been considerable selling for foreign account, but little factory interest over the period. On the other hand inquiries from factories would indicate they are ready to enter the market as soon as it shows any tendency to settle.

A bearish trend has dominated trading since the big break in the market after the British Premier's announcement, and the statistical position of crude rubber has not helped the situation. Immediately after the Easter holidays, April position dropped a total of 250 points to 18.00 cents in two days, but by April 14 the position has improved to 18.50 cents. On April 16 the market went off again to 17.50.

The present prices are the lowest since October, 1922, just before the restriction legislation went into effect. There is considerable speculation as to what will be the situation immediately after November 1 and whether immense stocks will be hoarded to await that date, but such a policy, in the light of the present price levels, is not thought likely. There is at present no factor in the situation which would give cause for optimism as to an improvement in the market, but, on the other hand, if consumption can be maintained at the present high level up to November 1, the expected increased production after that date may not throw such a quantity of crude rubber onto the market as to disrupt the producing industry.

RUBBER WORKERS RUSH TO FORD CONCESSION

A rush of rubber workers in the Amazon Valley of Brazil to the new Ford rubber concession, which has many of the appearances of a Klondike rush, is reported by the press in Manaos. The newspaper dispatches state that the workers are flocking down the river to the new area in such numbers that the region where the Ford concession is located is already over-run with such labor and the plantation owners and traders in crude rubber in the upper reaches of the region are not able to get the natives to gather the usual supplies and are putting the question up to the government. The belief seems to have spread amongst the natives that the Ford project holds an El Dorado for them.

The table below indicates the daily movements in prices and the volume of daily sales since the day after Mr. Baldwin's now famous announcement.

Rubber Through the Suez

With the establishment of factories on the Pacific coast by so many of the larger American rubber manufacturing companies, the present routing of a heavy proportion of the crude rubber from the Far East may be completely changed. At present the major portion comes by way of the Suez Canal.

According to the Department of Commerce, the Suez Canal Company reports rubber shipments through Suez in 1927 as 605,000 long tons, 358,000 long tons credited as coming from Malaya; 139,000 from Netherland East Indies; and the balance from Ceylon and other sources. Of the total, the United States was the destination for 382,000 long tons, Europe taking the balance of 223,000 long tons.

For the month of January, 1928, shipments through Suez totaled 45,000 long tons, of which the United States was the destination for 31,000 tons.

RUBBER RESEARCH BILL PASSES SECOND READING

The House of Commons recently passed the British Rubber Industry Bill at its second reading by a vote of 104 to 52. The bill, which has been commented upon in various issues of THE RUBBER AGE, provides for contributions from rubber manufacturers of £15,000 a year to the Rubber Research Association. The contributions suggested are on the basis of one-fiftieth of a cent per pound of rubber used in manufacturing processes. Out of 122 firms in the trade 95 were in favor of the bill. Those opposing represented 9 per cent of the capital in the industry.

Motion Pictures of Guayule

A private showing of the Intercontinental Rubber Company's four-reel motion picture on guayule rubber was given in the Company's head offices at 1775 Broadway, New York City, on April 11. Rubber company officials and press representatives, including Isaac Marcosson of the *Saturday Evening Post*, were present. The picture was explained by George H. Carnahan, president of Intercontinental. Gathering the wild guayule shrub in Mexico and the production of rubber from it was clearly and carefully shown and was followed by pictures covering the cultivation of the shrub in California.

Estate Assessments Criticised

According to reports from Singapore to the Department of Commerce, local rubber interests in the Straits Settlements and Federated Malay States are awaiting with some uneasiness the action of the official committee charged with revising the assessed standard production for the balance of the current restriction year. The new assessments are to be published April 30. The assessment committee has already received protests in connection with many preliminary assessments. The situation is all the more aggravated by the contemplated abolishment of restriction after November 1.

A fire at the rubber factory of the Anglo-French Trading Company, Singapore, recently destroyed a quantity of crude rubber valued at $300,000. A few days earlier, on March 6, over 200 tons of rubber were destroyed also by fire at the Seah Yang Theng factory, Singapore.

Closing Prices on Rubber Exchange of New York, Inc.

APRIL 5 TO APRIL 19, 1928

Date	Spot	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Sales*
Apr. 5	20.50	20.50	20.70	21.00	21.10	21.10	21.20	21.20	21.20	21.20	21.20	21.20	21.30	2,527
9	19.50	19.40	19.60	19.90	19.90	20.00	20.00	20.00	20.00	20.00	20.10	20.10	20.10	860
10	18.00	18.00	18.00	18.20	18.40	18.50	18.60	18.50	18.50	18.50	18.50	18.50	18.50	2,426
11	18.10	18.00	18.20	18.30	18.50	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	1,497
12	18.50	18.50	18.60	18.80	18.90	19.00	19.10	19.10	19.10	19.10	19.10	19.10	19.10	765
13	18.50	18.50	18.70	19.00	19.00	19.00	19.10	19.10	19.10	19.20	19.00	19.00	19.00	897
14	18.60	18.50	18.70	18.90	19.00	19.10	19.20	19.20	19.20	19.20	19.30	19.30	19.20	235
16	17.50	17.40	17.50	17.70	17.90	18.00	18.10	18.10	18.10	18.10	18.30	18.20	18.20	1,375
17	17.00	16.60	16.90	17.20	17.50	17.60	17.70	17.80	17.80	17.80	17.80	17.90	18.00	1,736
18	17.20	17.00	17.30	17.50	17.70	17.80	18.00	18.00	18.00	18.10	18.20	18.20	18.20	1,285
19	17.40	17.20	17.50	17.60	17.70	18.00	18.20	18.30	18.30	18.40	18.60	18.60	18.50	1,096

(*) In lots of 2½ tons each

CATALPO!

CHAMBER OF COMMERCE TO HOLD ANNUAL MEETING

The Chamber of Commerce of the United States will convene its 16th annual meeting at Washington, D. C., May 7. An elaborate program has been arranged including addresses by a large list of prominent leaders in industry and business.

Of particular interest to the rubber industry will be the session on May 10 when Alfred Reeves, general manager of the National Automobile Chamber of Commerce, will address the morning general session on "How Teamwork Paid in the Automobile Industry." At the annual dinner on the same evening, Dr. Alberto Pirelli, head of the Pirelli Company of Milan, Italy, and president of the International Chamber of Commerce, will be one of the principal speakers and will take for his subject "International Teamwork for Prosperity."

RUBBER EXCHANGE HEAD HELPS FORM SILK 'CHANGE

In the process of the organization of the National Raw Silk Exchange, Inc., at New York, R. F. Henderson, president of the Rubber Exchange, has been asked to act as one of the incorporators and organizers because of his signal success in organizing the Rubber Exchange.

The membership of the Silk Exchange will be limited to 250 members and trading will be done along the lines of the Rubber Exchange. Incorporation papers have already been filed and trading is expected to begin within the next three months.

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CATALPO!

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

APRIL 20, 1928

COTTON

THE cotton market has been quite firm during the last fortnight with the tendency towards slightly higher prices. There has been considerable speculative buying which has stimulated the market. The government boll weevil report also gave a bullish urge to the situation. The future course of the market will depend almost entirely on the new crop developments. Plantings are reported somewhat backward. According to the Cotton Textile Institute the weekly average production of standard cotton cloth during March was lower than in any month since October, but sales were 97.7 per cent of production. The demand for spot cotton is largely confined to merchants who are finding it necessary to fill their forward commitments.

High, low and closing prices as of April 18 follow:

	High	Low Apr. 18	Close	Close Apr. 3
April	19.99	19.99	19.99	19.25
May	20.06	19.80	20.02	19.28
July	19.93	19.66	19.90	19.18

Tire Fabrics

The New Bedford tire fabric mills are running full time in spite of strike conditions in that region. Inquiries have been heavy, particularly for carded peeler cords and prices have advanced slightly during the fortnight. On the other hand, actual commitments have slackened in anticipation of a curtailment in tire production next month. Late prices are as follows:

CORD			
Peeler, carded, 23/5/3	lb.	.45 @	.46
Peeler, carded, 23/4/3	lb.	.46½@	.47½
Peeler, carded, 13/3/3	lb.	.43 @	.43½
Peeler, carded, 15/3/3	lb.	.44 @	.44½
Egyptian, carded, 23/5/3	lb.	.58 @	.60
Egyptian, combed, 23/5/3	lb.	.60 @	.62
CHAFERS			
Carded American, 8 oz.	lb.	.38 @	.39½
Carded, American, 10 oz.	lb.	.40 @	.41
Carded American, 12 oz.	lb.	.39 @	.42
Carded American, 14 oz.	lb.	.37 @	.41
LENO BREAKER			
Carded American, 8¼ oz.	lb.	.39 @	.41
Carded American, 10¼ oz.	lb.	.39 @	.41
SQUARE WOVEN			
Carded American, 17¼ oz. 23-11 ply	lb.	.44 @	.45
Carded American, 17¼ oz. 10-5 ply	lb.	.37 @	.38

Sheetings

The demand for sheeting has been small and even the usual number of inquiries have dropped off. A number of low bids have been made for summer runs, but the mills have not been inclined to meet them. The only buying interest in evidence has come for 40-inch stock, the grade most popular in the rubber manufacturing industry.

40-inch, 2.50-yard	yd.	.12¼ @	.12⅝
40-inch, 2.85-yard	yd.	.10⅞@	.11
40-inch, 3.15-yard	yd.	.12 @	.12⅛
40-inch, 3.60-yard	yd.	.09⅞@	.10
40-inch 3.75-yard	yd.	.08½@	.08¾
40-inch 4.25-yard	yd.	.07¼@	.07⅓

Ducks

The market for cotton ducks has shown improvement in the last two weeks with buyers covering to a reasonable extent. Enameling ducks stocks are greatly reduced and there has been a decline in the inventories of other constructions. Prices have remained firm, however, in spite of the slight advance in the cotton market. Latest quotations follow:

Belting and Hose	lb.	.32½@	.33
Enameling	lb.	.33½@	.36
Shoe Ducks	lb.	.30 @	.33
Single filling	lb.	.14½@	.17
Double filling	lb.	.17½@	.18

RECLAIMED RUBBER

In spite of the drop in the price of crude rubber, the high production schedules prevailing in the rubber manufacturing industry is keeping reclaimed rubber in steady demand and the price levels are reported unchanged. One of the largest reclaiming plants reports that their April business is the highest they have had. Over 18,100 tons of reclaimed was used by the industry during March and represented 50.8 per cent of the total crude rubber used.

High Tensile			
Super-Reclaim No. 1 Black	lb.	.16 @	.16½
Super-Reclaim No. 2 Black	lb.	.13½@	.14
High Tensile Red	lb.	.15¾@	.16¼
Shoe			
Unwashed	lb.	.08 @	.08¼
Washed	lb.	.10 @	.10½
Tube			
No. 1 (Floating)	lb.	.16 @	.16½
No. 2 (Compounded)	lb.	.13½@	.14
Tires			
Black, washed		.10 @	.10⅛
Black, unwashed		.08¼@	.08½
Black selected tires	lb.	.08¾@	.09
Dark Gray	lb.	.11½@	.12
Light Gray	lb.	.13 @	.13⅛
White	lb.	.15 @	.15½
Truck, Heavy Gravity	lb.	.07½@	.07⅝
Truck, Light Gravity	lb.	.08 @	.08¼
Miscellaneous			
Mechanical Blends	lb.	.07 @	.08
Red	lb.	.14 @	.14½

Scrap Rubber

With the continued demand for reclaimed the market for scrap rubber has remained firm. The prevailing good weather has aided collections, but stocks are barely keeping pace with demands from the reclaiming plants. The fact that prices for reclaimed have not yet been greatly affected by the drop in crude rubber is also helping to keep the price levels up on scrap grades. Latest prices follow:

(Prices to Consumer)

Auto tire peelings	ton	36.00	@37.50
Standard White auto	ton	57.50	@60.00
Mixed auto	ton	26.00	@27.50
Bicycle tires	ton	30.00	@32.50
Clean solid truck tires	ton	22.00	@24.00
Boots and shoes	lb.	.01½@	.01⅝
Arctics, trimmed	lb.	.01⅛@	.01¼
Arctics, untrimmed	lb.	.01 @	.01¼
Inner tubes, No. 1	lb.	.07½@	.07¾
Inner tubes, No. 2, compounded		.04½@	.05
Inner tubes, Red	lb.	.06¼@	.06½
Air Brake Hose	ton	38.00	@40.00
Rubber Hose	ton	18.00	@20.00

CRUDE RUBBER

THE crude rubber market since the announcement of the British Government on restriction has been in a state of uncertainty with price levels continuing to show declines. Very little real buying interest is manifested from factory interests which are waiting for the market to settle and the trading has largely been confined to speculative operations. Prices for spot smoked ribbed sheets on the New York market reached as low as 16½ cents on April 17, but have recovered to around 17¼ cents. With the plantations grades at this figure little interest is being shown in Paras and others. Hope is expressed that price levels will rest for a time at around 17 to 18 cents and that factories which have been buying for immediate requirements will soon be forced into the market for substantial commitments. At the same time the statistical position of crude rubber is not helping the market. Stocks on hand and afloat to the United States have reached the highest peak in the history of the industry and arrivals are continuing heavy. The one bright spot in the situation is the high rate of consumption which during March exceeded 35,000 tons. If such a rate of consumption can continue, it may force an improvement in the market. Prices quoted on the New York outside market at the close of business on April 18 were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot	.17 @	.17¼	
April	.17 @	.17¼	
May-June	.17¼@	.17½	
July-Sept.	.17½@	.17¾	
First Latex, crepe spot	.17½@	.17¾	
Amber Crepe, No. 2	.16¼@	.16½	
Amber Crepe, No. 3	.16 @	.16¼	
Amber Crepe, No. 4	.15¾@	.16	
Brown Crepe, Rolled	.14¾@	.15	
Brown Crepe, Clean, thin	.16 @	.16¼	
Brown Crepe, specky	.15½@	.15¾	
Liquid Latex, per gal.	@	1.50	
Paras—			
Uup-river Fine	.17		
Up-river Medium	Nominal		
Up-river Coarse	.14		
Acres Bolivian, fine	Nominal		
Caucho Ball, Upper	.17¼		
Islands, fine	.17		
Centrals—			
Central, scrap	.14½@	.15	
Esmeraldas	.14½@	.15	
Guayule, washed and dried	Nominal		
Balata—			
Block, Colombia	Nominal		
Block, Cuidad	Nominal		

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot	8 @	8¼d	
April	8 @	8⅛d	
May-June	— @	8⅛d	

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	8¼@	8¼d	

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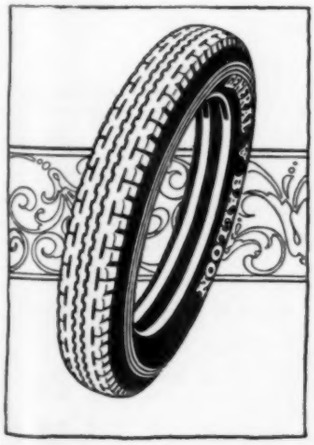

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LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

APRIL 20, 1928

INTEREST at this writing centers around the drastic drop in prices of DPG and DOTG which occurred almost immediately after the decision of the United States Supreme Court on April 9, declaring invalid the Weiss patent on di-substituted guanidines. DPG dropped from the previous quotation of 64 cents to 40 cents and DOTG declined from 80 to 48 cents. At this writing it appears that these prices are close to cost of production, but should any unexpected factors enter the field, a further reduction might be made. This contingency, however, is not being considered seriously by leading producers of accelerators. A reduction of 2½ cents was made this month in Hexa, the present quotation being 60 to 65 cents. Leading distributors and producers of rubber chemicals and compounding materials report a slackening up of interest by rubber manufacturers. Contract withdrawals are firm, but spot business has dropped off very materially. Quotations follow:

ACCELERATORS

Organic			
A-7	lb.	.65 @	.85
A-11	lb.	.70 @	.90
A-16	lb.	.65 @	.85
A-19	lb.	.70 @	.90
A-20	lb.	.64 @	.80
Aero-X	lb.	.75 @	—
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Crylene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolyiguanidine	lb.	.48 @	.49
Diphenylguanidine	lb.	.40 @	.41
Ethylidene aniline	lb.	.60 @	.65
Formaldehyde Aniline	lb.	.36 @	.38
Grasselerator 102	lb.	.62½@	.67½
Grasselerator 552	lb.	4.45 @	4.60
Grasselerator 808	lb.	1.05 @	1.35
Grasselerator 833	lb.	1.50 @	1.75
Heptene	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.60 @	.65
Lithex	lb.	.18 @	.20
Methylenedianilide	lb.	.38 @	.40
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.90
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92 @	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45 @	4.60
R & H 40	lb.	.50 @	.55
R & H 50	lb.	.50 @	.55
Safex	lb.	1.20 @	1.25
Tensilac, No. 89	lb.	.55 @	.60
Tensilac, No. 41	lb.	.65 @	.70
Thermlo F	lb.	.50 @	.55
Thiocarbanilide, drums	lb.	.25½@	.26½
Thionex	lb.	3.25 @	—
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenylguanidine	lb.	.65 @	.70
Vulcanex	lb.	.82 @	.86
Vulcone	lb.	.70 @	.74
Vulcanol	lb.	1.05 @	1.08
Z 88	lb.	.75 @	1.00
Inorganic			
Lead, sublimed blue	lb.	.08¼@	.08¾
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.09 @	.09¼
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.33 @	.35
Ultramarine	lb.	.06 @	.30
Browns			
Sienna, Italian	lb.	.05 @	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.34 @	.36
Reds			
Antimony crimson, 15/17	lb.	.44 @	.50
sulphur free	lb.	.50 @	.55
golden 15/17 F.S.	lb.	.18 @	.22
Indian English	lb.	.08 @	.12
Domestic (Maroon)	lb.	.08 @	.12
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Venetian red	lb.	.03 @	.06
Vermillion, quicksilver, English	lb.	1.85 @	1.95
Whites			
Lithophone, Akcolith	lb.	.05 3/5@	.06
Lithophone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox	lb.	.10 @	.10½
Cal. Base Pigment	lb.	.10 @	.10½
Zinc Oxide—American Process			
American Azo: ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.07⅛
Zinc Oxide—French Process			
White seal	lb.	.11⅞@	—
Green seal	lb.	.10⅞@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.15½@	.16½
Ocher, French medium	lb.	.03½@	.06
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.08 @	.12
Bone Black	lb.	.05½@	.11
Carbon, compressed	lb.	.07½@	.11½
Carbon, uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.10
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.08 @	.12
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.04¼@	.04½
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	ton	12.00 @	14.00
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesia, carbonate	lb.	.08½@	.11
Mica, powdered	ton	65.00 @	80.00
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	12.00 @	15.00
Velvetex	lb.	.04 @	.07
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Superfine	ton	10.00 @	12.00
Witco	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.09½@	.10½

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	42.00 @	45.00
Pioneer-granulated	ton	52.00 @	55.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.35 @	.36
Acids, Fatty			
Stearex	lb.	.10 @	.14
Stearic, double pressed	lb.	.11½@	.12½
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	
Oils			
Castor, No. 3 bbls.	lb.	.13½@	.14
Corn, refined, bbls.	lb.	.11 @	.11½
Cottonseed, crude		.08½@	.08¾
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c. l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05 @	.06
Glycerine, C. P. drums	lb.	.17 @	.17½
Linseed, Raw C.L. bbl.	lb.	.09½@	.10
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07⅝@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Peanut, domestic, crude	lb.	.12 @	.12¼
Petrolatum, white	lb.	08⅞@	.09
dark amber	lb.	.03⅝@	.03½
Pine, steam distilled	lb.	.70 @	
Rapeseed, refined	gal.	1.04 @	1.06
Rosin, first rectified	gal.	.55 @	—
second rectified	gal.	.58 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb.	bbl.	10.20 @	
Pigmentar	gal.	.33 @	.41
Tar Retort, 50 gal.	bbl.	12.50 @	18.00
Solvents			
Acetone, pure	lb.	.13 @	
Alcohol denatured, No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride		.06¾@	.07½
Motor gasoline, steel bbls.	gal.	.17 @	—
Naptha, solvent	gal.	.35 @	.40
Turpentine, spirits	gal.	.60 @	.64
wood	gal.	.50 @	.54
Waxes			
Beeswax	lb.	.56 @	.58
Carnauba	lb.	@	.50
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Miscellaneous			
RSL Mold Solution	gal.	.75 @	.100

ANTI-OXIDANTS

Antox	lb.	.79 @	.83
Neozone	lb.	.74 @	—
Oxynone	lb.	.68 @	.90
Resistox	lb.	.60 @	.70
Stabilite	lb.	.65 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03½@	.06
Sulphur flour,			
Superfine bags	cwt.	2.20 @	2.80
Superfine, bbls.	cwt.	2.55 @	3.10
100% pure, refined, **bags**	cwt.	2.60 @	3.15
bbls.	cwt.	2.95 @	3.50

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

IT is too early yet to note the effect in statistical tables of the British Government's announcement that restriction will be abolished as of November 1, but the reaction of the crude rubber market can be seen in the price tables. On April 17 spot rubber was quoted as low as 16½ cents, but it reacted within the next two days to a slightly higher figure. Preliminary figures covering crude rubber importations show that arrivals were fairly heavy in March. The amount of rubber invoiced to the United States has fallen slightly according to government figures, but the Rubber Association report of crude rubber afloat to the United States would indicate that shipments were continuing heavy.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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The consumption of Rubber during March showed an appreciable gain over February and reflects the reports of heavy production throughout the manufacturing industry. The increase in rim inspections shows the continued high production within the automobile manufacturing industry.

The total of crude rubber stocks on hand and afloat to the United States reached a high record on March 31 and stocks in London have shown no appreciable change.

Latest figures covering imports and exports of rubber in the leading producing and consuming markets are included in appropriate tables in this section.

U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	425,142	338,998,697	35.59	27,775	24,735,488	39.77	403,472
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,738,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,514	28,693,026	36.07	2,763	3,249,665	52.50	32,751
Apr.	46,202	37,284,806	36.15	1,575	1,428,425	40.45	44,627
May	36,543	30,998,657	37.87	2,782	2,501,562	41.74	33,761
June	33,045	27,833,770	36.28	1,775	1,550,592	38.99	31,270
July	37,678	31,678,259	37.53	1,958	1,560,853	35.58	35,720
Aug.	32,810	26,396,904	36.59	1,809	1,382,768	34.49	31,001
Sept.	33,301	23,852,857	33.73	3,500	3,036,929	34.91	29,801
Oct.	30,184	22,163,044	32.77	2,513	2,042,713	36.29	27,671
Nov.	38,113	27,039,129	31.67	2,468	2,014,196	36.43	36,123
Dec.	30,696	22,183,601	32.26	2,654	2,245,754	37.77	28,042
1928:							
Jan.	39,108	30,278,444	34.56	1,988	1,734,990	38.95	37,552
Feb.	33,094	27,309,598	36.84	2,738	2,229,589	36.34	30,356
Mar.*	35,710	27,982,723	34.98				
Apr.							
May							
June							
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

*Official estimates based on arrivals at New York and Boston.

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927	1928
Jan.	5,045	16,938	30,106	29,058	29,638	32,196	31,518	34,403
Feb.	5,955	14,767	30,149	25,736	29,761	31,136	30,137	33,702
Mar.	9,190	21,408	36,629	28,385	33,498	32,936	36,141	35,688
Apr.	13,084	19,294	29,085	27,129	34,139	32,696	35,871	
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592	
June	16,142	31,713	24,272	22,753	35,822	28,598	33,801	
July	18,310	24,522	17,685	23,396	36,053	27,577	29,219	
Aug.	23,649	29,361	20,359	28,982	35,909	34,533	33,460	
Sept.	16,705	24,410	17,594	31,497	31,691	32,904	27,214	
Oct.	16,814	26,881	21,321	31,520	29,047	29,836	26,790	
Nov.	14,105	24,950	20,437	27,289	28,853	28,080	26,792	
Dec.	15,482	25,070	21,902	27,199	28,748	26,293	25,492	
Totals	170,504	282,560	305,694	328,769	388,481	366,149	371,027	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927
Jan./Mar.			96,776	87,609	95,263	94,301	99,216
Apr./June	65,463	127,360	89,493	75,674	104,099	87,109	103,242
July/Sept.			55,621	83,813	99,493	93,793	89,210
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	80,860
Totals	171,425	282,427	305,507	339,752	384,644	358,415	372,528

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
February 11	4,994	733	1,089	1,155	7,971
February 18	4,717	1,256	1,469	1,147	8,589
February 25	6,147	613	1,664	240	8,664
March 3	3,865	618	1,576	1,756	7,815
March 10	4,789	685	1,376	1,951	8,801
March 17	3,981	487	1,463	1,856	7,787
March 24	4,253	409	1,266	2,323	8,251
March 31	2,652	528	1,028	776	4,984
April 7	3,061	718	1,381	882	6,042
April 14	3,097	606	1,585	209	5,497

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1925																																
July	61¼	61⅝	65⅝	—	—	88⅝	90½	95⅝	94⅞	99⅝	106⅜	—	110	105⅝	110⅝	117	116⅝	118	—	121	117⅛	119	117⅝	112¼	112¼	85¼	107⅝	96⅝	93⅝	89¾	93¾	103⅛
August	94½	—	95⅝	88⅝	86⅝	81⅝	79	78¾	—	71⅜	72½	76½	81½	80⅝	77⅝	78½	82⅝	80½	80¾	83½	82½	82½	82½	82½	82½	85¼	85⅛	87½	89⅝	90	88
September	88¾	87⅛	85	81¾	81¾	—	—	80½	83	86½	92	—	92	93⅝	93⅝	92⅝	92⅝	92⅝	94¾	—	93⅝	93⅝	93⅝	90	89	—	89⅝	85⅛	89⅝	91⅝	88⅝	88⅞
October	91¾	91⅜	92	—	94⅜	97	97½	99	99⅛	101	—	97⅝	95½	97	99⅛	99	99	99	99	102	99⅜	99⅜	99⅜	99¼	98	98	—	99½	99⅝	101½	100¼	98
November	99⅜	—	98⅝	98⅜	100	100⅛	—	98⅜	99½	100⅛	101⅜	104⅜	105½	—	101	109	107	107	109⅜	110⅜	110⅛	109	110⅜	109	106¼	—	108⅜	108⅝	—	107	91¼	104⅝
December	106⅝	108½	107⅜	107¼	108¾	—	108	109	109¾	106	105½	105½	—	101	99¼	90¾	93	88¼	86⅝	—	88¼	90⅝	88⅝	88¾	—	—	—	91	93	91¼	91¼	98½
1926																																
January	—	—	—	87	87¼	85½	86½	87½	87¾	—	88½	88¼	88¼	85½	84½	82½	75½	75½	75½	75½	72½	72	—	68	66½	67	69¼	70½	69	—	—	79½
February	—	67	67½	66¼	68	69	—	—	69	66	66	66	65½	63	63	60½	60	60	60	61	61	56	55	60	48	60	51	51¾	—	—	68	62¾
March	—	55	58	58	58½	57½	56	56	55½	61	60	63	61½	62	62	60½	61	62	61	61½	48	61½	61	60	48½	60	60	59½	58½	48¾	68	59	61¾
April	—	59	59	59	59	58	56½	56½	53	53	—	—	50½	48½	48½	—	47	47	47	47½	47½	48	48	48	48	48	48	48	48	48	—	47¾
May	—	50	50¼	49½	49¾	49¾	49	49	49	49	49½	49	49¼	47¾	47½	48	47	47	47½	47	47½	46	46	46	45	45	45	45	45	45	—	47¾
June	—	42	41¾	42	41½	41¾	42	41¾	41¾	41¾	43	43	43	43¾	43¾	43	43	43	43	43	44	43½	43½	43	43	42	43	42	42	42	—	42½
July	—	42	42	41	41½	41½	41½	41½	41½	41½	41½	41½	41½	40	40	40	40	40	40	41½	41½	41	41½	39	42	41½	41½	39½	41	39	39	41½
August	—	42	42	42	41	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	39½	39½	41	41	39	42	42	41	39½	42	42	40	41½
September	—	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	41½	41½	42¼	42¼	42¼	42¼	42½	42½	42½	42½	42½	42½	41
October	—	43	43	43¼	42¾	42¾	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42¾	42¾	42¾	42¾	42¾	42½	42½	42½	42½	42½	42½	—	42½
November	—	41¾	41	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41¾	41¾	41¾	40½	40½	39½	39½	38¾	38¾	38¾	38¾	38½	38	37¾	37¾	38½	37	—	38½
December	—	36¾	37½	37½	37½	—	37	37	37	37	37	37½	—	37½	37¾	38	38	38	38	38¾	38½	38½	38¾	39	—	—	39	38½	38½	38½	38½	38¼
1927																																
January	—	—	—	38½	39	39¾	39¾	40¾	40¾	40½	40¾	40¾	40¾	40¾	40¾	40¾	39¾	39¾	39¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38	38¾
February	—	87¾	87¾	87¾	87½	—	—	87¾	87¾	87¾	87¾	—	87¾	87¾	87¾	87¾	88¾	88¾	88¾	88¾	88½	88½	88½	88½	88½	88½	88½	88½	88½	88½	88	88¼
March	—	39¾	39¾	40	40¾	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41	41
April	—	41¾	41¾	41	41	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41	41¼
May	—	—	—	—	40¾	41	41	—	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
June	—	40¾	40¾	40¾	—	—	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½
July	—	—	—	—	—	85¼	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾
August	—	85½	85¼	85¼	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾	84¾
Sept.	—	33¾	33¾	—	—	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	33½	34	33¾	33¾	33¾	33¾	33¾
Oct.	—	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼	85¼
Nov.	—	85	85¼	85¼	85¼	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾	86¾
Dec.	—	40½	40¼	40¼	40¼	40¾	40½	40½	40¾	—	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	41½	41½	41½	41½	41½	40½
1928																																
January	—	—	—	41¼	41¼	41¼	41	41	41	41	41	41	41	41	41	41	41	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	—	37¾	37¾	37¾	37¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾
March	—	29	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾
April	—	—	—	27¼	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	
May	15.25	27.39	18.89	58.47	47.75	40.76	
June	15.11	26.88	18.81	77.26	42.50	37.25	
July	14.67	26.10	22.16	103.16	41.03	34.44	
Aug.	15.93	28.84	26.17	82.99	38.50	35.12	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Sixth Restriction Year—Second Quarter

Day	Feb.	Mar.	Apr.	Day	Feb.	Mar.	Apr.
1	18⅝	13⅞	—	17	15⅝	12¼	8
2	17¾	13¾	12⅞	18	15¼	—	8
3	18	13¾	12⅞	19	—	13⅛	
4	17⅞	—	10¼	20	14¾	13	
5	—	13⅝	9½	21	14⅜	12¾	
6	17¾	13½	—	22	14⅝	13	
7	17¾	12⅜	—	23	14⅝	13⅛	
8	17⅞	12⅛	—	24	13⅜	13¼	
9	16¼	12⅛	—	25	13¾	—	
10	16⅛	12½	8¾	26	—	13	
11	16⅝	—	8⅜	27	14	13⅛	
12	—	11¾	8⅝	28	14⅛	13⅛	
13	15⅞	11½	8⅝	29	13⅞	13¼	
14	15¾	11⅝	8¾	30	—	13⅛	
15	15⅝	11⅜	—	31	—	13	
16	15½	12⅛	8⅜				

(The average price for the period for which daily prices are reported above is approximately 11.412 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28
Nov.-Jan.	14.285	14.175	17.9983	46.709	19.265	19.023
Feb.-Apr.	16.858	12.917	19.356	28.103	19.696	
May-July	14.242	10.947	38.469	21.001	18.165	
Aug.-Oct.	14.944	14.632	43.269	20.199	16.620	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Mar. Cents	Apr. Cents	Day of Month	Mar. Cents	Apr. Cents	Day of Month	Mar. Cents	Apr. Cents
1	18.95	——	11	——	20.20	21	19.80	
2	18.90	19.95	12	19.00	20.25	22	19.80	
3	18.70	19.80	13	19.05	20.45	23	19.75	
4	——	19.85	14	19.10	20.50	24	19.85	
5	18.95	19.85	15	19.20	——	25	——	
6	18.90	——	16	19.50	20.35	26	20.00	
7	18.95	——	17	19.65	20.55	27	20.00	
8	18.95	——	18	——	20.50	28	19.90	
9	18.95	20.30	19	19.45		29	19.85	
10	18.95	20.10	20	19.90		30	19.65	
						31	19.70	

Average Monthly Price Per Pound

Month	1926 Cents	1927 Cents	1928 Cents	Month	1926 Cents	1927 Cents	1928 Cents
Jan.	20.85	13.42	19.12	Aug.	18.57	20.04	
Feb.	20.60	14.10	18.40	Sept.	17.02	21.95	
Mar.	19.35	14.32	19.38	Oct.	13.14	20.55	
Apr.	19.13	14.75		Nov.	12.86	20.22	
May	18.92	16.07		Dec.	12.68	19.58	
June	18.57	16.85		Average for Year	17.53	17.49	
July	18.71	18.00					

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	55,198	76,172	110,244	46,296	45,312	41,256	100,484	121,484	151,500
Feb.	58,035	91,186	108,955	46,935	42,166	43,316	104,970	133,352	152,271
March	61,822	85,740	114,061	43,567	49,600	39,324	105,389	135,340	153,385
April	55,261	92,757		41,905	38,963		97,166	131,720	
May	64,360	94,563		40,303	44,181		104,663	138,744	
June	60,460	89,250		40,907	47,233		101,367	136,483	
July	64,900	98,469		38,062	40,587		102,962	139,056	
Aug.	60,870	96,148		37,360	40,937		98,230	137,085	
Sept.	62,078	97,829		42,464	37,966		105,542	135,795	
Oct.	64,089	97,452		52,930	42,804		117,919	140,256	
Nov.	69,385	101,034		47,311	37,076		116,696	138,110	
Dec.	72,520	100,130		52,020	47,938		124,540	148,068	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1920	1921	1922	1923	1924	1925	1926	1927
Jan.	19,300	56,573	67,252	73,498	57,460	27,172	9,994	54,994
Feb.	18,329	59,439	67,623	70,483	56,732	23,425	10,004	58,826
Mar.	18,969	63,913	66,670	65,438	55,647	18,104	18,127	63,055
Apr.	20,072	68,759	68,637	58,770	54,559	12,949	18,773	66,897
May	20,921	70,403	70,146	54,439	51,615	5,895	20,384	67,169
June	22,517	69,408	71,597	51,050	51,115	5,318	23,984	63,902
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727	63,717
Aug.	30,674	73,211	72,112	58,427	49,700	4,619	30,165	64,491
Sept.	35,504	72,175	70,977	54,523	44,011	5,453	35,077	68,236
Oct.	41,743	69,229	68,536	58,891	37,523	5,086	42,138	69,569
Nov.	45,550	70,786	68,548	60,074	33,593	3,869	44,057	67,050
Dec.	50,652	69,792	72,299	60,246	29,488	5,697	48,918	.....

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1927					
July	63,917	64,163	63,511	62,819	63,626
August	64,177	64,557	64,842	64,259	———
September	65,162	66,148	66,664	67,253	———
October	68,519	70,167	70,916	70,060	69,551
November	69,660	69,501	69,850	67,318	———
December	65,869	66,011	64,761	63,397	63,207
1928					
January	64,360	65,524	65,450	66,285	———
February	65,909	64,945	63,769	63,103	———
March	61,978	61,920	61,033	59,644	58,197
April	58,732	58,945			
May					
June					

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1926	1927	1928	End of	1926	1927	1928
Jan.	16,726	25,440	25,868	July	23,101	22,558	
Feb.	13,653	26,766	22,867	Aug.	23,362	25,764	
Mar.	18,389	27,844	20,538	Sept.	25,997	25,178	
Apr.	16,328	24,543		Oct.	26,614	25,790	
May	16,967	25,133		Nov.	25,486	28,369	
June	19,416	21,898		Dec.	26,443	25,798	

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1922	16,297,735	0.0	1925	26,001,664	66.8
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1927			1928		
July	1,679,587	84.4	January	1,811,534	87.8
August	1,825,905	80.2	February	1,806,437	86.5
September	1,727,122	77.7	March		
October	1,354,924	81.4	April		
November	838,591	67.8	May		
December	1,134,421	80.0	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927	1928
January	11,918,000	14,386,000	17,582,000	17,888,000	20,939,000
February	9,626,000	13,210,000	15,814,000	18,240,000	21,136,000
March	10,961,000	14,890,000	19,302,000	22,464,000	
April	14,583,000	19,013,000	20,848,000	23,871,000	
May	15,889,000	20,459,000	24,213,000	26,579,000	
June	16,421,000	20,724,000	23,803,000	27,799,000	
July	18,610,000	22,879,000	24,752,000	29,784,000	
August	19,825,000	22,323,000	26,912,000	29,779,000	
September	16,871,000	20,177,000	22,929,000	28,409,000	
October	18,029,000	19,826,000	23,973,000	25,497,000	
November	16,607,000	18,024,000	20,618,000	24,400,000	
December	15,663,000	17,954,000	21,419,000	23,718,000	
TOTAL	185,003,000	223,865,000	262,165,000	297,928,000	20,939,000

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927
Production	40,932	45,259	51,633	60,845	61,237	64,439
Shipments	39,987	45,204	50,120	59,262	59,062	64,059
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	4,587	4,965	5,491	2,974	4,932	5,394	9,947	10,432	9,949
Feb.	4,865	5,095	6,363	3,436	4,458	5,031	11,164	11,075	11,721
Mar.	5,456	6,276		4,561	5,701		12,004	11,583	
Apr.	5,346	6,299		4,980	5,701		12,461	12,122	
May	5,023	6,151		5,211	5,657		12,343	12,462	
June	5,422	6,202		5,724	6,253		11,968	12,462	
July	4,950	5,087		6,337	5,973		10,592	11,326	
Aug.	5,872	5,752		6,744	6,393		9,732	10,721	
Sept.	5,706	4,822		6,040	5,717		9,318	9,722	
Oct.	5,103	4,773		4,544	4,799		9,917	9,665	
Nov.	4,324	4,502		3,733	4,306		10,297	10,136	
Dec.	4,683	4,497		4,718	4,165		10,456	10,264	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927
Production	50,850	60,116	70,706	82,614	76,618	70,823
Shipments	49,673	59,072	68,016	81,004	71,591	72,896
Inventory[2]	7,643	8,425	11,052	11,318	16,200	15,692

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	6,809	5,337	5,441	3,723	6,016	6,072	14,361	15,585	12,982
Feb.	6,825	5,658	6,895	3,736	5,120	5,431	17,090	16,075	14,650
Mar.	7,030	7,184		4,987	6,157		19,131	17,096	
Apr.	6,554	7,373		5,051	6,359		20,674	17,801	
May	6,149	6,737		6,304	6,140		21,141	18,389	
June	6,171	6,306		6,898	6,832		20,243	17,858	
July	5,729	5,284		8,569	7,070		17,267	16,004	
Aug.	7,424	6,480		9,579	7,983		15,462	14,664	
Sept.	7,590	5,651		7,762	6,758		15,312	13,511	
Oct.	6,208	5,065		5,474	5,024		15,929	13,539	
Nov.	4,852	4,775		4,045	4,723		16,604	13,585	
Dec.	5,277	4,969		5,463	4,712		16,200	13,692	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1921	1,595,304	1,452,902	142,402	66,246	61,098	5,148	1,661,550
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927							
Jan.	238,926	199,650	39,276	15,376	11,745	3,631	254,302
Feb.	304,758	264,171	40,587	18,655	14,826	3,829	323,413
March	394,430	345,911	48,519	23,250	19,723	3,527	417,680
April	404,743	357,009	47,734	24,611	20,890	3,721	429,354
May	404,099	357,148	46,951	25,708	21,991	3,717	429,807
June	321,959	278,728	43,231	19,208	16,470	2,738	341,167
July	268,474	236,866	31,608	10,987	8,719	2,268	279,461
Aug.	308,807	274,378	34,429	12,526	10,139	2,387	321,333
Sept.	260,420	226,440	33,980	11,262	8,681	2,581	271,682
Oct.	219,712	183,041	36,671	7,791	6,236	1,555	227,503
Nov.	134,381	109,742	24,639	6,617	5,173	1,444	140,998
Dec.	133,178	105,784	27,394	3,435	2,277	1,158	136,613
TOTAL	3,393,887	2,938,868	453,019	179,426	136,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	233,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March							
April							
May							
June							
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]							
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[4]	Amazon Valley	All Other[5]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1926:															
Jan.	30,452	10,237	20,215	4,246	1,273	416	472	289	4,110	6,239	8,165	866	1,284	1,805	49,380
Feb.	30,440	8,306	22,134	5,120	725	488	450	253	4,524	5,717	6,854	554	2,759	1,978	51,556
Mar.	35,012	14,800	20,212	5,177	1,113	792	561	418	4,527	5,566	11,984	573	2,126	1,899	54,948
Apr.	23,727	10,565	13,162	3,766	590	679	374	293	4,226	4,598	6,285	410	2,318	1,529	38,230
May	31,231	10,604	20,627	3,944	691	927	410	279	4,440	5,358	8,737	502	1,353	1,464	48,732
June	30,624	11,764	18,860	4,208	452	779	512	275	4,444	6,125	10,614	549	1,213	1,279	49,310
July	28,324	15,280	13,544	4,422	938	911	498	439	4,618	5,612	13,112	1,521	1,565	1,148	48,328
Aug.	34,625	13,595	21,030	5,666	521	890	476	316	4,132	5,699	10,390	378	1,888	1,097	52,483
Sept.	35,913	13,972	21,941	6,015	651	888	689	457	4,065	6,568	11,391	681	2,156	822	56,324
Oct.	29,367	15,203	24,164	5,672	634	805	473	385	4,058	6,998	11,491	661	1,904	1,023	58,268
Nov.	34,302	12,201	22,101	4,228	1,110	685	547	285	3,988	5,816	9,422	718	1,911	1,259	52,070
Dec.	36,811	14,716	22,095	6,498	1,176	895	617	338	5,054	7,117	12,786	790	3,821	714	61,901
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,187	6,706	10,690	941	3,482	981	56,404
Feb.	27,528	11,697	15,831	3,571	1,469	552	445	360	4,078	6,526	10,535	675	2,104	1,098	47,244
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,557	7,004	12,905	733	3,178	1,791	65,484
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,531	10,197	557	2,451	1,520	46,928
May	31,393	15,491	15,902	3,124	760	786	415	348	5,430	5,529	13,410	586	2,460	1,207	49,957
June	32,607	14,706	17,901	3,348	856	1,100	539	409	4,818	5,518	9,109	772	889	1,731	46,990
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	519	1,757	1,113	43,699
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,355	6,682	12,440	716	1,928	969	48,703
Sept.	29,835	12,095	17,740	4,911	479	645	566	498	3,635	5,957	9,853	497	2,072	1,213	48,066
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	3,810	7,755	13,633	775	2,752	939	51,520
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,378
Dec.	32,185	17,865	14,320	4,130	1,395	946	592	664	5,763	7,878	13,438	1,191	3,340	1,444	55,101
1928:															
Jan.	27,731	16,618	11,113	4,352	1,605	842	500*	525	4,851	7,988	11,360	720	2,273		
Feb.	28,813	12,911	15,902	4,353	1,081	667	500*	536	4,052	6,757	8,635	723	1,612		
Mar.	27,813	10,508	17,305									613	2,750		

(1) Mayalan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Italy, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States[a]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	–3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	–11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	–807	3,178	944	1,370	414,847
1925	381,315	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	32,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,643
1926:															
January	40,345	6,886	2,832	703	2,188	892	760	332	438	76	163	303	89	134	56
February	31,435	3,114	3,063	1,113	1,865	741	1,041	643	512	143	88	397	145	75	4/
March	40,316	5,907	3,941	1,342	2,079	864	1,037	832	547	129	227	377	109	161	/
April	33,416	5,275	4,121	1,781	1,615	1,868	865	402	505	71	93	335	130	193	
May	28,705	6,773	2,519	1,848	1,239	1,010	705	200	468	186	241	225	60	192	
June	23,795	5,894	2,196	1,655	1,188	1,465	1,070	983	636	269	215	303	123	103	
July	34,266	6,768	2,352	2,202	1,552	1,447	800	132	702	295	480	292	121	115	
August	26,081	7,327	2,457	2,110	1,888	1,284	796	655	1,275	303	594	336	90	151	
September	35,675	8,843	1,774	2,029	1,355	1,922	819	472	1,241	283	429	317	91	138	
October	28,110	8,082	3,376	2,423	1,865	2,396	645	585	1,004	301	2	360	100	121	
November	37,673	9,247	2,719	3,007	1,548	3,380	832	568	916	194	–18	358	90	181	.6
December	35,850	4,749	2,890	2,562	1,847	856	439	725	777	248	156	443	151	306	61,999
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	192	316	139	100	64,382
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	152	336	146	210	47,780
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,269
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,736	2,896	2,006	3,380	2,519	1,084	918	887	694	626	–57	335	155	223	49,402
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	583	–17	243	164	183	46,616
July	35,719	1,116	2,384	2,899	2,104	1,505	1,007	415	900	429	66	227	177	236	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	–63	312	138	123	47,785
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	–33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,453	1,242	784	–202	514	268	300	47,028
	398,483	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,492	636	4,224	2,055	2,672	627,789
1928:															
Jan.	37,552	1,921	1,764	2,485	2,290	1,361	546	572		589	52	261	335	376	
Feb.	30,926	3,143		2,984	2,553	1,258				599	98				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—United Kingdom exports to Russia, and beginning with October, 1927, exports from the United States to Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation: such imports amounted to 4,305 tons in 1926 and to 5,019 tons in 1927.

Big Increase Shown in Rim Output

A MATERIAL increase in rim production during March over the output in February is noted in the report of the Tire and Rim Association of America, Inc. The number of rims inspected and approved last month totaled 2,420,084 as compared with 1,806,437 rims passed in February. Last month's total also exceeded the production in March a year ago which was 2,071,989. The total for the three months of the current year exceeds that of the same period last year by approximately 700,000 rims.

Rim Size	Mar. No.	1928 %	3 Mos. 1928 No.	%
Motorcycle				
24x3	2425	0.1	9448	0.2
26x3	345	0.0	12773	0.2
28x3	—	—	452	0.0
Total	2770	0.1	22673	0.4
Clinchers				
30x3½	53335	2.2	125390	2.1
31x4	1511	0.1	1511	0.0
Total	54846	2.3	126901	2.1
18" Balloons				
18x3½	—	—	9362	0.2
18x4	152426	6.3	345479	5.7
18x4½	11355	0.5	23185	0.4
18x5	—	—	—	—
Total	163781	6.8	378026	6.3
19" Balloons				
19x3½	234431	9.7	452135	7.5
19x4	238332	9.8	579146	9.6
19x4½	101425	4.4	286498	4.7
19x5	—	—	—	—
Total	574188	23.9	131777	921.8
20" Balloons				
20x3½	81407	3.4	186907	3.1
20x4	397391	16.4	92400	915.4
20x4½	30816	1.3	127285	2.1
20x5	61581	2.7	139505	2.3
20x6	5611	0.2	36718	0.6
Total	576806	24.0	141442	423.5
21" Balloons				
[illegible]	50650	2.3	163605	2.7
2.75-21-D	596649	24.6	157693	226.2
21x4	70934	2.9	231638	3.8
21x4½	41360	1.7	149268	2.5
21x5	1551	0.1	3077	0.1
21x6	943	0.0	943	0.0
Total	768087	31.6	212546	335.3
22" Balloons				
22x3½	1509	0.1	1509	0.0
22x4	—	—	756	0.0
22x4½	640	0.0	640	0.0
Total	2149	0.1	2905	0.0
High Pressure				
30x3½-23	5974	0.2	13917	0.2
32x4½-23	3215	0.1	13681	0.2
32x4 -24	6119	0.3	13231	0.2
33x4½-24	—	—	406	0.0
32x3½-25	—	—	—	—
33x4 -25	—	—	1293	0.0
34x4½-25	649	0.0	649	0.0
Total	15957	0.6	43177	0.6
20" Truck				
30x5	196219	8.1	461734	7.7
32x6	34769	1.4	71920	1.2
34x7	11575	0.5	24911	0.4
36x8	5345	0.2	14501	0.2
40x10	154	0.0	1413	0.0
Total	248062	10.2	574479	9.5
22" Truck				
36x7	515	0.0	1129	0.0
24" Truck				
34x5	1086	0.0	6171	0.1
36x6	3160	0.1	8716	0.1
38x7	7678	0.3	10496	0.2
40x8	846	0.0	5396	0.1
44x10	153	0.0	320	0.0
Total	12923	0.4	31099	0.5
GRAND TOTAL	2420084		6038055	

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of THE RUBBER AGE published semi-monthly at New Brunswick N. J., for April 1, 1928.

State of New York
County of New York
ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared P. L. Palmerton, who having been duly sworn according to law, deposes and says that he is the Editor of THE RUBBER AGE and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Palmerton Publishing Company, Inc., 250 W. 57th St., New York City; Editor, P. L. Palmerton, 250 W. 57th St., New York City; Managing Editor, None; Business Manager, Peter P. Pinto, 250 W. 57th St., New York City.

2. That the owner is, (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given).

Palmerton Publishing Company, Inc., 250 W. 57th St., New York City; P. L. Palmerton, 250 W. 57th St., New York City; Aviation Publishing Corp., 250 W. 57th St., New York City.

3. That the known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are:

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contains statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

P. L. Palmerton, Editor

Sworn to and subscribed before me this 30th day of March, 1928
[seal] HANNAH GOLDENSON, Notary Public.

(My commission expires March 30, 1930.)

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